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Ship Scrapping with Oxy-Acetylene

Commercial Operation of Cutting Up Heavy Steel Parts, Such as Armor Plate —Various Methods of Procedure

Fig. 1 and Fig. 2 (Oval)

CONSIDERABLE interest has been aroused in the "infant" industry of ship scrapping by the fact that the Government is selling a large number of naval vessels for salvage. These vessels, which in the aggregate amount to above 600,000 tons, are to be scrapped in accordance with the provisions of the treaty limiting naval armament, and must be dismantled by the purchasers within eighteen months from the date of ratification of the treaty, Aug. 17, 1923.

A number of firms have already had considerable experience in scrapping naval vessels, merchant ships and lighter craft. Naturally, their experiences would prove very valuable to those who are contemplating bidding for vessels now to be sold, since by taking advantage of the lessons learned by their predecessors considerable money, and certainly much time, may be saved.

One of the earliest ship scrapping operations undertaken was breaking up the battleship Maine in Havana harbor in 1911, after the wreck of this old naval vessel had been exposed to the elements for about 13 years. Many of the problems met in this work will not confront those undertaking the scrapping of the vessels now being offered for sale. When it was decided to break up this wreck it was planned to take the plates of the ship apart by cutting the rivets and bolts with an air chisel, or with a hand chisel and sledge, while the more substantial fabrication might be demolished by blasting. Before the job was even attempted, however, the engineers in charge of the work estimated that the time which would be required to break up the wreck, laid bare in an extensive cofferdam, would be so great as to magnify the hazards unduly. It therefore became evident that more practicable means for doing the work must be had.

Cutting with the oxy-acetylene flame was proposed and after the first demonstration of this process the old methods were abandoned. The wrecked forward portion of the ship was thus cut away and cut up, while the bulk of the hull, with a bulkhead built across the cut-off portion, was then towed out to sea and sunk, with naval honors.

Following the success of this pioneer work, whenever ship scrapping was undertaken from time to time, down to the period following the World War, the oxy-acetylene cutting blowpipe was used as a matter of course. Some of the jobs during this period were spectacular in themselves and a few of them attracted public notice, but it was not until the Government began to dispose of obsolete equipment after the war that ship scrapping again received notable attention from the press. About two and one-half years ago bids were asked for the purchase of a number of first-line ships, several transports and many destroyers, submarines and vessels of other types. These were offered for sale to be scrapped and were purchased by those in the scrap business or in allied lines.

In nearly every instance the vessels sold at this time were towed to a point accessible to railroad sidings, there to be scrapped by oxy-acetylene cutting. Much of the propelling and other machinery in the vessel was removed and converted to the uses of commerce and the purchasers of the ships found a profitable market for the brass, copper and other metals used in the fittings. Even the wire constituting the communication systems within the vessels was salvaged. Re-

Fig. 3—Remains of Army Transport Meade, Aground at Low Tide in the Delaware River at Bridesburg, Pa. This ship was 525 ft. long

frigerating machinery, pumps, cranes and handling machinery were removed and resold as parts of commercial equipment. When these vessels were thus stripped of all their portable equipment the oxy-acetylene blowpipe was utilized to reduce the superstructure, the hull and the heavy fittings to charging box size, all previous experiences having clearly pointed to the fact that by no other means could the vessel profitably be reduced to scrap.

Now, at a time when all but possibly one or two organizations have finished the work on obsolete vessels purchased from the Government for scrapping, comes the ratification of the Five-Power Naval Armament Limitations Agreement, which projects the country into a more extensive ship scrapping program than was ever before undertaken. A score or more of ships, from great battleships, thoroughly equipped and in commission, to hulls of new battle cruisers on the ways (designed to be the speediest and most powerful fighting machines afloat) are to be scrapped, and the arrangement under which they are being disposed of provides that they shall be reduced to such a condition that neither the vessel as a whole nor any of its parts can again be used as equipment for combat purposes.

Some vessels, sold under the provisions of this arrangement, are now in course of demolition. In general, the method employed is to moor the vessel alongside a wharf and strip it of its superstructure, masts, stacks, cranes and other appurtenances. A typical arrangement is shown in Fig. 1. Openings are then cut in the deck plates, through which the machinery from below is removed (Fig. 2).* After this work is completed the deck plates themselves and the hull of the ship are attacked, the work proceeding by sections until it almost reaches the waterline. When this time is reached the remainder of the hull is sometimes towed up on the beach at high tide as shown in Fig. 3, and at low tide another row of plates is removed. This process is repeated at each successive high and low tide (Fig. 4) until the keel of the ship can be towed on to land, where demolition is completed. The steel is cut to charging box sizes and then shipped to steel plants for remelting.

Some contractors were able to cut ships to a line where the hull could be converted to use as a barge or a car ferry. The profits derived from the sale of the hull for purposes of this kind have materially aided in bringing up the gross profit derived from the scrapping transaction.

What was at one time considered a serious problem in this work was the breaking up of the heavy armor plate of the naval vessels. Some of the ships sold immediately after the World War were disposed of under the condition that the armor plate should be removed intact and returned to the Government, but at present the vessels are sold under arrangements which provide for scrapping the armor. Here the oxy-acetylene cutting blowpipe reaches its highest degree of usefulness in ship scrapping. It is inconceivable that the reduction to charging box size of the armor plate would be attempted by cold chisel and sledge, but before oxy-acetylene cutting was adopted for this work such tools or drilling and blasting were the only methods available.

Two old naval vessels are now being scrapped at a point where tidewater wharfage is available and where a railroad spur makes it possible to handle the scrap

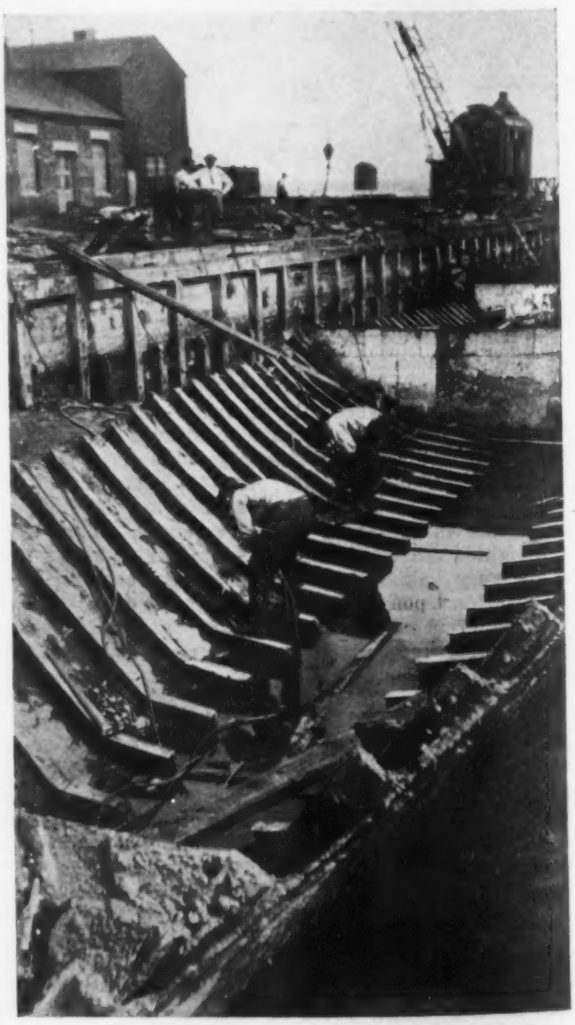


Fig. 4—Last Stages of Demolition of the Army Transport Meade

*The man wears a mask to guard against fumes from the numerous coats of paint on the decking and other steel work.

metal directly from the ships to cars. Direct handling reduces costs and in the same ratio increases the profit made by the company undertaking the salvage work. Cranes of sufficient capacity are so located, also, that it is possible to lift intact such portions of the ship as may be desired to a point on shore where they can be further reduced to size or, for that matter, shipped to a purchaser who can put a mechanical unit into use.

These two vessels (the Kentucky, illustrated in Fig. 1, and the Ohio, in Fig. 5) were ships which had a displacement of about 12,000 tons each. They were more than 360 ft. long, had a beam of 72 ft., and a draft of 23 ft. 6 in. The armor belts were 16½ and 12 in. thick, respectively, and the turret armor was 17 to 12 in. thick. The main armament consisted of four 12-in. guns in the Ohio; four 13-in. and four 8-in. in the Kentucky. Together, the vessels represented about 18,000 tons of steel and several hundred tons of brass and copper fittings.

Scrapping these ships was begun by cutting off and removing the deck fittings and parts of the superstructure. Most of this equipment was cut on the vessel only sufficiently to remove it, and was further reduced to charging box size after it had been lowered to the mainland. Through handling part of the work in this way the operators were enabled to attack the remainder of the superstructure and the deck plates unhindered by work going on above them. The larger guns were cut into pieces in place and the pieces were swung directly from the decks to waiting gondola cars. Cutting this armament represented an interesting oxy-acetylene application and was handled with ease and great rapidity with hand cutting blowpipes.

When the decks were cleared of most of the metal which could be conveniently removed large openings were cut to permit the removal of machinery and fittings. Such of this equipment as could not be economically salvaged and sold for commercial purposes was then reduced to scrap. This remark also applies to much of the piping and other fittings in the hulls of the ships.

About 25 per cent of the weight of such ships is armor. Upon the handling of this material depends, to a considerable degree, the profit of the whole scrapping operation. This contractor removed the armor belt and the turret armor to shore, where it was cut to charging box size.

Several difficulties were met. The first of these was occasioned by the composition and the condition of the armor plate itself. It is, of course, a special alloy steel, case hardened to a depth of several inches on the outside. When in position it was backed by several inches of teak. The hardened outside surface made it advisable to cut the armor while it lay face down; but after the armor was placed in this position no difficulties were encountered in cutting it with either the hand cutting blowpipe or a blowpipe mechanically guided by a straight line cutting machine, as in Fig. 6. Fig. 7 shows that the operation leaves little to be desired for general all around appearance.

The protective deck and the lighter armor was cut in place and loaded directly from the ships to the cars. In various sections of the vessels the plating consisted of several laminations. In many sections these laminations were separated by heavy coatings of red lead or some other type of paint or protective covering which, although at times it rendered the cutting less speedy and less comfortable than it otherwise would have been, did not interfere with the progress.

The proportions of each class of material recovered by scrapping naval vessels naturally varies with the age and type of the ship. It has been estimated, however, as a rough guide, that about 60 per cent of the vessel's weight represents heavy steel scrap, 10 per cent light steel scrap, 7½ per cent brass and copper, 2½ per cent lead, 5 per cent cast iron and 15 per cent wood, dust, rubbish, paint and other waste.

Fig. 5 (Left) Cuts on Forward Turret of Battleship Ohio. Each sighting hood has been cut into three parts

Fig. 6 (Above) Straight-Line Cutting Machine at Work on 16-In. Armor

Fig. 7 (Below) Armor Plate Scrap as Cut up by the Torch, Showing Holes for the Bolts Which Held the Armor to the Ship's Side

National Founders' Meeting

The 1923 annual meeting of the National Founders Association will be held Nov. 21 and 22 at the Hotel Astor, New York. James A. Emery, counsel of the association, will discuss "The Outlook" at the morning session of Nov. 21. The addresses scheduled include the following, all to be delivered in the afternoon session of that day except the last two, which are on the program for the morning session of Nov. 22.

"Personnel Work—Is It Practical? Does It Pay?" by Dr. H. H. Myers, personnel superintendent, Ohio Brass Co., Mansfield, Ohio.

"What I Saw in Europe," by Magnus W. Alexander, managing director, National Industrial Conference Board, New York.

"Bootlegging Mind Poison," by Fred R. Marvin, associate editor New York *Commercial*.

"Educational Motion Pictures," by Dr. Paul Smith, vice-president, American Motion Picture Corporation, New York.

"A Foundry Apprentice Training System That Works," by Horace A. Frommelt, educational director, Falk Corporation, Milwaukee.

"A Talk on Gray Iron Foundry Practice and the Remedy for Some of the Troubles Encountered," by Enrique Touceda, consulting engineer, American Malleable Castings Association.

The reports of officers, President William H. Barr, Commissioner A. E. McClintock and Secretary J. M. Taylor, will be presented at the beginning of the Wednesday morning session. The program provides also for reports of the new membership committee, H. J. Boggis, chairman, and that on industrial education, L. W. Olson, chairman.

At the annual dinner, Wednesday evening, Hon. J. Adam Bebe of Minneapolis will speak.

Program of Mechanical Engineers' Meeting

Pressed metal will come in for special attention at the annual meeting of the American Society of Mechanical Engineers, to be held at the society's headquarters in New York, Dec. 3 to 6, inclusive. Papers on the subject will be presented in the machine shop session on the morning of Dec. 6.

Among other subjects scheduled for the annual meeting are the following: Management, on the afternoon of Dec. 6; fuels on the morning of Dec. 5; development in power economy in the power session on the morning of Dec. 6; and contributions on the corrosion of various alloys, to be presented in the aeronautic section, on the morning of Dec. 6.

Extracts from the program follow:

General Session, Dec. 4—H. A. S. Howarth, Kingsbury Machine Works, Philadelphia, a graphical study of journal lubrication; S. Timoshenko, research department, Westinghouse Electric & Mfg. Co., East Pittsburgh, bending and torsion of multi-throw crankshafts on many supports.

Fluid Meters Session, Dec. 4—Open meeting for discussion of part II of the report of the special committee on fluid meters.

Fuels Session, Dec. 5—O. P. Hood, Bureau of Mines, Washington, fundamental factors in the spontaneous combustion of coal; F. G. Tryon, U. S. Geological Survey, Washington, economic phases of coal storage; H. E. Birch, R. H. Beaumont Co., and H. V. Coes, Ford, Bacon & Davis, Philadelphia, coal handling and coal storage.

Ordnance Session, Dec. 5—Capt. H. W. Churchill, executive assistant, New York District Ordnance Office, some production problems in the War Department's preparedness plan.

Power Session, Dec. 6—E. H. Brown and M. H. Drewry, Allis-Chalmers Mfg. Co., Milwaukee, gains in power-plant economy from extracting steam from stages of main turbines; C. F. Hirshfeld, Detroit Edison Co., Detroit, and F. O. Ellenwood, Cornell University, Ithaca, N. Y., high pressure, reheating and regenerating for steam power plants; C. W. E. Clarke, power engineer, Dwight P. Robinson & Co., New York, boiler test results with preheated air, Colfax Station, Duquesne Light Co.

Machine Shop Session, Dec. 6—D. P. Cook, Boston Pressed Metal Co., Worcester, Mass., some principles and examples of metal development; W. W. Galbreath, president, and John R. Winter, general superintendent, Youngstown Pressed Steel Co., Warren, Ohio, the development of modern stamping practice; progress report on the present status and future problems of the art of cutting metals, a review of the present knowledge concerning the elements entering into the cutting of metals.

Aeronautic Session, Dec. 6—D. Basch, research engineer, General Electric Co., and M. F. Sayre, Union College, Schenectady, N. Y., resistance of various aluminum alloys to salt-water corrosion; H. A. Gardner, Henry A. Gardner Laboratory, Washington, corrosion, cleansing and protection of aluminum alloys, such as duralumin.

Management Session, Dec. 6—R. T. Kent, consulting management engineer, Montclair, N. J., relation of mechanical engineering to management in the metal-working industries.

Ohio Foundrymen to Hold November Meeting in Toledo

Members of the Ohio State Foundrymen's Association will have an opportunity to inspect the plants of the Willys-Overland Co. and the Toledo Furnace Co. at Toledo, Ohio, on the occasion of the annual convention of the association Nov. 15 and 16. The meetings will be held at the Toledo Yacht Club, beginning with a luncheon on Nov. 15, followed by an afternoon session during which several technical and practical papers will be read and discussed. Most of Friday will be given up to plant visiting. Among the papers to be read are the following: "Patterns, the Starting Point of Profit and Loss," by Dan M. Avey, managing editor of *Foundry*, Cleveland; "Your Insurance Costs and the Adjustment of Losses," by W. M. Todd, district manager Western Adjustment Co., Toledo; "Problems in Brass Foundry Practice and Their Solution," by Fred L. Wolf, technical superintendent Ohio Brass Co., Mansfield, Ohio; "Foundry Costs, Ferrous and Nonferrous," by E. T. Runge, E. T. Runge Cost Co., Cleveland.

Officers of the association are: Frank W. Huber, president; Walter L. Seelbach, treasurer, and Arthur J. Tuscany, Century Building, Cleveland, secretary. The Toledo committee having charge of convention arrangements consists of C. C. Smith, Toledo Steel Castings Co., chairman; C. E. Bunting, Bunting Brass & Bronze Co., and William Baker, Baker Brothers.

Section Meetings of Mechanical Engineers

Among meetings of sections of the American Society of Mechanical Engineers scheduled in the immediate future are the following:

Birmingham, Nov. 21, anniversary dinner at Hillman Hotel. Subjects, "Impressions from My Recent Trip Abroad," by James Bowron, Gulf States Steel Co.; "Interesting Experiences in Russia," by Robert Palm; "With the Red Cross in Judea," by H. Y. Carson. (H. L. Freeman, secretary, Alabama Power Co., Brown-Marx Building, Birmingham.)

Cincinnati, Nov. 22, at Literary Club Rooms, "Grinding of Gear Teeth," by R. S. Drummond, Gear Grinding Machine Co.

Detroit, Nov. 23, Hotel Statler. Banquet honoring Dean Mortimer E. Cooley of the University of Michigan and past-president of the society. (F. H. Low, secretary, Ford Motor Co., Highland Park, Detroit.)

Newark, N. J., Nov. 26, Machine shop meeting. (S. H. Libby, secretary, General Electric Co., Bloomfield, N. J.)

New Haven, Nov 20, at Mason Laboratory, Yale University. "Leviathan, Her Reconditioning and Trial Trip," by Prof. H. L. Seward of Yale University. (Prof. S. W. Dudley, secretary, 400 Temple Street, New Haven, Conn.)

Worcester, Nov. 13, at the Boston Store restaurant, dinner at 6.30 followed by addresses. "X-Ray Examination of Metals as Employed by the Government," by Gen. T. C. Dickson, commandant of the Watertown Arsenal, accompanied by Dr. F. C. Langenburg, metallurgist and research engineer of the arsenal. (M. C. Nelson, secretary, 424 Massasoit Road, Worcester, Mass.)

The Trafford City foundry of the Westinghouse Electric & Mfg. Co. set a new high record mark in October in monthly production, when 3,300,568 lb. of castings were produced. That compares with the former record of 3,184,598 lb. in March, 1916.

How Germany Must Work Out Problems

Longer Work-Day Essential to Adequate Production—
Ruhr Regarded as Lost to Germany—
Interview with Minister of Labor

BY DR. RICHARD MOLDENKE

FOLLOWING up the recent interviews of the writer with Sir Arthur Balfour, for Great Britain, and Dr. Federico Giolitti, for Italy, it seemed essential that France and Germany should be covered similarly. Arrangements were therefore made to get into touch with the most prominent captains of industry in these countries, so that these men might give a message to the iron and steel industry of America telling of the steps taken to return their countries to normalcy, the probable trend of steel production, export and kindred topics. The results were disappointing, as these men would not talk for publication and in some cases evaded a meeting.

The situation is perfectly understandable; in the case of France the great industrials might not interfere with the policy of the Government, which is doing everything to crush German competition; in the case of Germany, the most important steel producers will shortly find themselves ruined by the French policy, and are therefore not making the process any more difficult to bear than they can. Most of the important men were seen, however, and sufficient information was obtained to enable me to draw the deductions given further on; but it should be kept in mind that, except where actually quoted, the responsibility for the statements is on the shoulders of the writer. In other words, the French industrials would not speak for publication —though approached through governmental and industrial channels, and with a loss of three weeks of precious time; and the German industrials dared not speak for publication, because of the impending ruin of their interests in the Ruhr and Rhine regions.

It remained for one man—the highest authority in Germany from the standpoint of the statesman, a member of the Cabinet—to take a farsighted view of the immediate political and industrial situation, and fearlessly combat outward and inward foes so that a disaster may not come to civilization in spite of every outlook for it at the moment. Dr. Heinrich Brauns, the German Minister of Labor, is the man in question, and in addition to the strictly political and industrial aspects of the world problems which he discussed, something will be given on his work in the interest of harmonizing capital and labor—which should also interest considerably the readers of THE IRON AGE.

French Fear of German Numbers

From the many interviews, and an intimate knowledge of the characteristics of the European peoples, the present crisis seems to me to rest upon the following bases, consisting of several lines of policy which shape diplomatic and executive military action. First, one does not hear much in France of reparations; one senses only the obsession that the sixty to forty millions of people ratio must be made fifty-fifty or better, at all hazards. Hence the huge military establishment, with the most modern of war equipment. The debt to America is never mentioned, if thought of, and the vast potentiality of England seems entirely overlooked. The condition today is exactly that of three periods of French history in the last century, when that nation overbalanced all the others.

With the traditional policy of England requiring a balance of power on the Continent of Europe, for which Germany has just suffered, it would seem that war is surely ahead sooner or later. The French policy is none the less understandable as, with the acquirement of the enormous ore resources of Lorraine, it is part of national economy to secure enough coke to utilize them to build up the national wealth again. Numerous selling agencies have been established by France the world over and, were it possible to have access to German coke from the Ruhr as needed, a period of wonderful prosperity would be ahead of the French steel industry.

On the thought above, the following seems to be the

DR. BRAUNS was born Jan. 3, 1868, at Cologne, Germany. Reared in the Catholic faith, he studied theology at the Universities of Bonn and Cologne, and later took up political science and law at the Universities of Bonn and Freiburg, receiving his degree of Doctor of Political Science at the latter institution in 1905. The trend of his activity is seen in the title of his thesis—"The Transition of Hand-Weaving to Factory Operation in the Lower Rhine Velvet and Silk Industry," published at the time and widely commented upon. In 1921 the University of his native city conferred upon him the degree of Doctor of Laws, honoris causa.

From 1890 to 1900 Dr. Brauns filled positions within the scope of his church, and from 1900 on he entered the labor field, as managing director of the National Society of Catholics of Germany, with special attention to the industrial courses taught the workingmen of that organization. He was a member of the National Assembly, for the district of Cologne, that framed the Constitution of the German Republic, and a member of the first Reichstag of the Republic. He represents his district in that body to the present day.

Dr. Brauns is now Minister of Labor (Reichsarbeitminister) over three years, serving continuously in seven cabinets. He is an author of books on labor organization and development, some of the titles of which are of interest, namely: The Christian Labor Unions; the Eight-Hour Day in the Mining Industry; Wages in the Mining Industry of Germany; the Law of the Shop Committees (Betriebsraete); Political Studies on the Wage Question; etc.

Dr. Brauns has the united support of all the organizations of German workingmen, and the complete confidence of all the organizations of manufacturers as well. Hence his name is found in all the cabinets from the time of von Fehrenbach to the present one, and he is likely to remain in office as long as his health will permit.

DR. HEINRICH BRAUNS,
German Minister of Labor

universal opinion in the several countries visited. If German and French ironmasters were to work together in perfect accord and with united interests, steel would eventually be produced at so low a figure that the steel export of all other nations would show sorry figures. On the whole—barring the super-patriots—this uniting of interests and activity is actually engaging the attention of the several French and German groups that would benefit by it. There are, however, some practically insurmountable obstacles to the idea. Even if the Schneider and the Stinnes groups, for instance, were desirous of cooperating closely, the two respective Governments will never agree. All kinds of hindrances would be interposed by way of taxes, tariffs, and what not. Further, it would require the closest kind of study and rearrangement of producing and distributing points to obviate over-prosperity and hardship going hand in hand. It is this problem that seems to me to underlie the second line of policy that is coming to light little by little.

Ruhr Separation Problem

In the equalization of the sixty to forty million, the separation of the Rhine and Ruhr districts from Germany would give France what she is working for, if these districts come under French influence and domination politically and industrially. It seems hardly likely that an actual annexation is contemplated—with what that would mean to English policy. But the creation of a protectorate, or a semi-independent state, is unquestionably the goal of France, and with it there would no longer be any border line between the antagonistic nations. The Ruhr and Rhine Republic, as evidently contemplated by France—in the view of the writer—would be surrounded by a wall, with high export duty for reparations on the German side, and lower duties on the side of France to keep out competition undesirable to French interests.

So much for the French side. Now for the German: It is now admitted almost everywhere in Germany that the Ruhr is lost to the Fatherland, as the consequence of French policy and military action. At the end of this month (October) German aid must necessarily cease in the occupied regions, as there is nothing left in Germany to send there—paper marks having gone to smash. The great industrial leaders are at their wits' ends to provide money to pay those men who have been retained at work to supply the small demand for manufactured products still existing.

Mr. Stinnes himself, the greatest of the industrial and financial leaders of Germany, planning with his staff how to meet the crisis, looked a physical wreck, and complained bitterly of the criticism heaped upon him at home and abroad these last days. He well remembered the writer, who spent an afternoon with him two and a half years ago, when his party had induced President Ebert and his Cabinet to ask President Harding for mediation in the reparations tangle; but Mr. Stinnes pleaded to be excused from making statements at this critical time, though urged to do so by Minister Brauns so that the United States might be able to judge the situation better. The consequence of this inability of Germany to help the Ruhr, the money being seized by France almost as fast as sent, means that, to avoid chaos and a possible futile massacre of the occupation troops, French money or a Rhineland Republic money will have to be provided, and this will be the present result so far as Germany is concerned. There will, however, be a new Alsace-Lorraine question and a very live one, placed upon the records of the world, and already there are no "pacifists" left in Germany.

Germany in a Bad Way

Of the internal conditions in Germany, actual observers who go into the markets—not from hotel balconies or in conducted parties—will find that they are frightful. The writer and his wife saw many tragic cases, but space forbids stating more here. Suffice it to say that there are two classes of German people today: those who sell to the population, and those who buy from these. The latter have to pay what is asked or pillage the shops—this is commencing now. The former naturally charge enough to cover the doubling prices day by day. Since, however, this overcharge is usually more than is actually required, the shopkeepers accumulate money, and then spend it freely, as do foreigners. So that there is a smaller class of regulation "pirates" preying upon a larger class of "victims." These pirates are the ones seen by those Americans who report that Germany is doing well.

It is but just, however, to look at the awful distress in Germany from another angle. The war had disorganized working forces and their efficiency in Germany just as much as elsewhere, and while Germany resumed activity earlier than the other nations, yet even today one sees the men loaf at their tasks, and the actual production per man-hour is still far below that of the pre-war time. The Minister of Labor himself enlarged on this situation in his talk with me and has recently introduced legislation in the Reichstag looking toward an increase of hours per day—in effect, a 10-hr. day, though the pill is sugar-coated in providing the maintenance of the basic 8-hr. principle.

Must Work Harder and Longer

Hence, in my view, the present catastrophe is largely the fault of the German population itself. Germany will have to work more intensely per man, and longer, to make good the handicap that exists in every country which cannot support itself from its home agriculture. As Minister Brauns said: "Paradoxical as it may seem, in order that Germany can sell more goods, it must produce more. Then the production cost will go down, competition will again be possible, and money will flow back to Germany with which to pay for foodstuffs brought from abroad. Shipload after shipload coming from agricultural countries has had to be turned away from German harbors, as there was no money available to pay for them."

So only from within can there come a reversal of the present conditions. The socialistic poison that has flourished so long in Germany has finally engulfed it, and one observes today that the socialists "sing very small." This view is voiced everywhere in the higher social structure here, but must still reach the masses. Unfortunately this truth can be brought home only through starvation, and unquestionably Germany is now facing this. Whether civil war will have broken out by the time this reaches the American public through THE IRON AGE remains to be seen, and will depend upon the coolness of the central Government. The army (Reichswehr) is absolutely loyal, being thoroughly winnowed out and ably officered. The police are dependable only in the smaller cities and the country. Despite reports to the contrary, communism has lost out, and the riots that have begun, and plundering of stores, are not from a revolutionary spirit, but the simple manifestations of desperation from inability to pay for food.

France Not Entirely Victorious

Now for another line of thought: In occupying the Ruhr district, the French had expected an easy victory. They did not reckon with the Westphalian population. Today the French have won a victory, but it is a Pyrrhic one, and has left the iron industry of France badly crippled. Inquiry for pig iron from France, I learned in Italy, showed that there was none to sell.

Two interesting rumors seem to have been in circulation in Europe: that the Germans have spent all their money in works' betterment, to be ready to compete to destruction when the time came; and that the Ruhr today contains 3,000,000 tons of semi-finished steel available for seizure by the French, if they wish to confiscate it. The facts are that, in spite of the original policy to improve the works so that reparations could be met while building up German industry and exports again, the Ruhr occupation has nullified all this again, and today the lesser railroad systems are abandoned and tracks grass-grown, rolling stock is unfit to use, and the bulk of the establishments are in a condition approximating a shut-down plant. The American iron industry need not be reminded what a steel plant is worth after it has been shut down for some time. Hence, with the new state of affairs coming in the Ruhr, production will not increase so rapidly as is

expected and the French budget will be lame for a long time to come.

So far as the rumored 3,000,000 tons of steel are concerned, this figure can safely be reduced by one-third. The danger here for the export business of the United States and Great Britain is that, if dumped upon the world's markets, as has happened with the German paper money seized, it would mean a bad temporary disorganization.

Interview with Dr. Brauns

With the above general discussion of the situation as it existed on Oct. 20, it is now in line to turn to the interview with Dr. Brauns. A short account of his activities appears in another place. I was first presented to him a little over two years ago, and came in contact with him almost daily for several weeks. Of commanding presence, magnificently proportioned, loved by everyone, and with a simple and truly Christian spirit, this man is today the ablest counsel of the cabinet. His is the largest governmental department, and he has in hand the boards, scattered all over the Reich, which care for the war-wounded and war-dependents. His department covers the entire range of legislation—both revision and new—of the labor laws, liability insurance, social welfare, housing and settlements, international labor questions and laws, "out-of-work" benefits, arbitration in labor disputes, etc. Some of the methods worked out will be described later on.

In these very critical times of labor unrest, Dr. Brauns has consistently held to the middle course and thus found agreement between both sides. His ability, the righteousness of his motives, his personal integrity and character above reproach, and his unselfishness of purpose, have endeared him universally, so that in all the recent cabinet changes it was a standing formula that "Minister Brauns must be in the new cabinet. He is irreplaceable at the time, for no other man exists in Germany who commands his field so ably and also enjoys the confidence of workingmen and employers fully and equally." Had Dr. Brauns continued his theological career, he would be today a prince in the Church of Rome.

Reparations Struggle with France

On arriving in Berlin, Dr. Brauns was kind enough to give the writer and his wife an entire evening at his home in the palace housing the Department of Labor. The story of the reparations struggle with France was outlined as actually handled by the various cabinets. One felt as being actually present at the green table and following out the tangled lines of diplomacy into the definite channels of action. The cry of the Ruhr for help, the rage of the men at being asked to work under bayonet rule in times of peace, the continuance of help long after the case was hopeless—to ward off a revolution. The changes in cabinets, the final blank wall of French refusal to deal with the German Government, the hopelessness in expecting a clean-cut discussion with the French premier. There stood out clearly the alternative—"no Ruhr, no Reparations."

Teutonic Recuperation Inevitable

But here again there stands out the statesmanship of Dr. Brauns, for in all this turmoil he is at work planning for a new Germany to work out its destiny on what remains of the once proud empire. If stripped as was Austria of its natural resources, it will be hard and take long; but whether as in the old days of Prussian liberation in the early part of the last century, or in quiet pursuit of contentment, the persistence, ability and strength of the Teutonic race will rise again and make a new Germany. But before this can happen the nation will have to drain the cup to the last bitter dregs, and the time seems to be now.

Naturally, much of the interview was of a confidential character, and will develop day by day as the plans for bettering conditions mature. But a portion of the time spent was devoted to the consideration of what has been done to bring capital and labor closer together, and what methods are in actual operation in the settlement of disputes to avoid strikes and consequent waste of treasure and time. The question was thought important enough to be put into concrete form so that no inaccuracy might eventuate, and Dr. Brauns was good enough to have his legal department chief put it into a short report. This, translated, is quoted as follows:

Binding Wage Agreements

"The idea of a definite wage agreement between employers and employees of a given industry has become a universal procedure in Germany ever since the war. Special agreements replacing such general agreements have practically ceased to exist. Actuated by the conviction that only through the means of such carefully worked out agreements, satisfactory to both sides, would the weakened and disintegrated industrial system of Germany recover again, Dr. Brauns undertook, at the very beginning of his administration, to devote all his strength and resources to the development of the wage agreement idea. Thousands of wage conferences have been held with the active cooperation of the minister and, where of particular gravity, Dr. Brauns himself has presided at the deliberations—this in particular in connection with the mining industry. It is to the credit of the minister himself that the entire mining industry of Germany now has regular wage agreement conferences.

"Laws passed just after the war have given him wide powers. As soon as a wage agreement between employers and employees of an industry has acquired strength enough to be recognized as binding by a large majority of those interested, the Minister of Labor can officially decree—without appeal—that the terms of such an agreement have become binding upon the entire industry, whether the others interested have been parties to the conferences or not. (This is designated the "Allgemeinverbindlicherklaerung"). In the case of these wage agreement conferences, should it turn out impossible to reach an agreement between the associations of wage earners and employers, the minister appoints a tri-party arbitration board consisting of equal numbers (usually three each) of employers, employees and prominent men who enjoy his confidence. Should the verdict of this arbitration board not be accepted by one of the two parties, the others may apply for a decree making it binding upon the objecting party. (This is designated "Verbindlicherklaerung").

"Such a decree of the Minister of Labor, which cannot be appealed, makes the terms of the verdict of the arbitration board binding upon the industry, just as if an agreement had been reached by the two parties in the first place. The enforcement of the decree can be understood to be easy in that it gives the workingman the right to sue his employer for the wage provided in the decree and get prompt judgment for the amount.

Power and Responsibility

"It will be seen that an immense power has been put into the hands of the Minister of Labor, and that the men selected for the arbitration boards must be equipped with a high degree of knowledge and experience. The minister himself must be imbued with a strong social sense of responsibility—all this so that wages may not be set to the damage of the industry involved. On the other hand, workingmen cannot be expected to give service under conditions that are not humanitarian."

Discussing the matter at length, Dr. Brauns gave instances in which very difficult cases had been solved without recourse to strikes. It amounts to compulsory arbitration, in effect. But, with the wisdom and sound sense of the minister, the laws have worked so well that no change or present improvement is contemplated. Dr. Brauns holds out the prospect of a future visit to the United States to study our labor conditions and laws which, so far as I have observed them, differ in many ways from those of Germany or England. In Germany, the heads of the labor organizations are trained political economists to a great extent, and such men can sit down and reason with others of like type who may head the employers' organizations.

Citroën Automobile Shops in France

Equipment and Methods of the Manufacturer Who Plans to Build Motor Cars Also in the United States

BY CAPT. GODFREY L. CARDEN

ANDRE CITROËN, who announced some time ago that he will build automobiles in the United States, has had a very successful career as a manufacturer in France. I first became acquainted with his shops in 1909, when he was employing not more than 40 men. At that time he was located in the suburbs of Paris and was making double helical gears. It was high-class work and stamped Mr. Citroën as a designer of more than usual ability.

Today Andre Citroën is employing more than 10,000 people, and under maximum conditions this number reaches 13,000. He first undertook to build automobiles in 1919, and in the past two and a half years he has put in circulation in France more than 50,000 cars. Two types, only, are made, namely, the 5-hp. and the 10-hp. The 10-hp. car is built at the Javel shops located on the banks of the Seine opposite Passy and only a few blocks below the Citroën Grennelle works. The latter works were installed by Citroën in 1911 and were designed for making helical gears and a general machinery line.

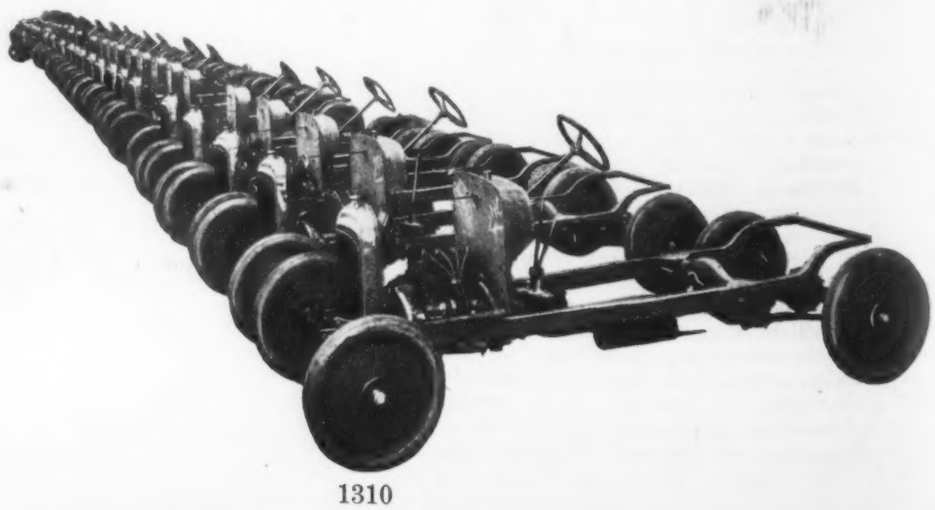
Mr. Citroën was carried on the French military establishment as an engineer officer and the breaking out of war called him into active service. His experience in shop work resulted in his being engaged in connection with projectile manufacture and in this way he became identified with the government projectile works on Quai de Javel. The ground at Javel as late as 1915 was a truck farm. The French War Department caused to be erected here one of the most modern projectile plants in France. For the most part outputs were confined to 75 mm. shrapnel.

At the end of the war when the Javel plant, in common with many others, was no longer required for war purposes, Mr. Citroën and his friends secured control of the property and turned it into an automobile works. This necessitated changes in installation but for the most part automatic machines previously used were lined up for turning out automobile parts. There is a very heavy display of American automatic tools throughout the Citroën shops, but many of these machines will have to be replaced since they have been running from war days.

I visited the Javel shops on March 14 and was accorded every facility. The layout is probably as good as can be found in France. The buildings are all modern in construction, splendidly lighted, and heated and ventilated in accordance with the best modern practice. The discipline and orderliness impresses the visitor at once and the handling of material provides for a steady flow without backtracking. At present the forge department is located at Javel, but it is the intention to move the forges to the Suresnes shops. In the cementation plant I counted 16 furnaces at work. They are the type of Loy and Aube, Paris. Citroën is turning out at present about eighty 10-hp. cars per day and about seventy 5-hp. cars. The 5-hp. cars are built at Levallois. The principal woodworking plant is at Issy-les-Moulineaux.

All presses in use are the type V, of Crampigneul,

At the Head of the Article Is Shown the Main Office Building of the Citroën Automobile Works as Viewed from the Quai de Javel, Paris



Cars Awaiting Tests as They Are Lined Up in the Assembly Shop

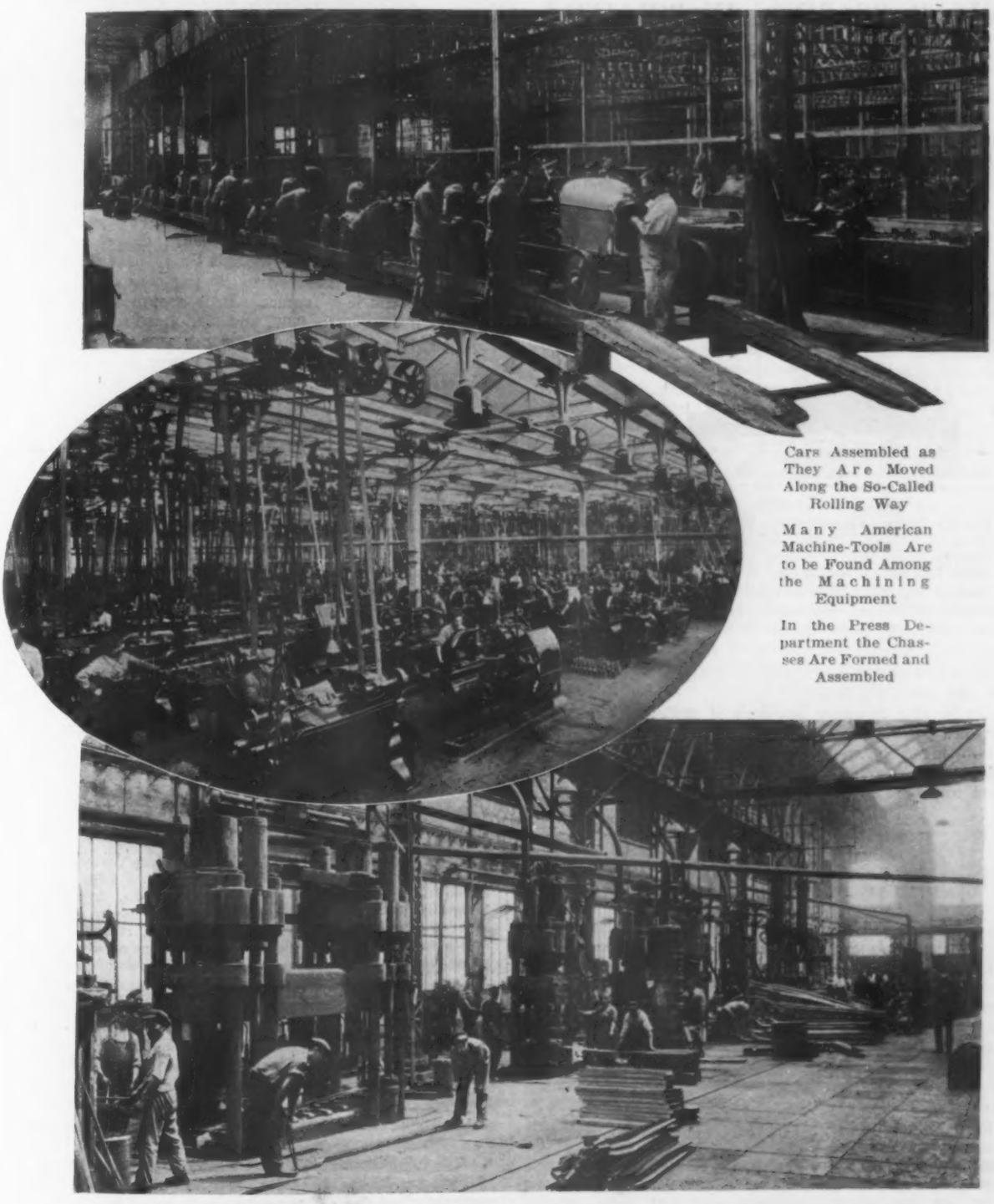
Paris. Women operatives work the press levers. The handling of the plate material is by male operatives. The chassis are assembled in the same shops where the frames are stamped out. Pneumatic tools are employed for this assembling work. Only the 5-hp. chassis are pressed out cold. The 10-hp. power chassis are bent after heating red hot.

The body work for the 5-hp. machines is undertaken at Javel. The chassis come from Levallois. In the spring-making department I observed one electric furnace only. All others are of the usual type. The springs are shaped up by hand, that is, pounded into shape for grouping by hand.

The main foundry is at Suresnes. Here are made the aluminum gear boxes, solid brass plug chamber of carburetor, cast iron cylinder boxes, cast iron flywheels and pistons. Much cast iron is used by Citroën. Just now cast iron is cheap in France. Citroën, I understand, is experimenting with aluminum pistons. In both the Suresnes and Javel foundries I found considerable molding machinery employed.

Many women are employed in the engine assembling works, and it was surprising to see what heavy jobs some of them were taking care of. Just now France is experiencing a very great shortage in workmen. My observations on the Polish shops were that many Polish workmen were going to France because of the higher wages and the demand for help. I assume that the retention of women in the French shops since the war is largely due to this shortage of male help.

Among the American machines in use were many with such familiar names as Brown & Sharpe, Pratt & Whitney, Cincinnati Milling Machine Co., Flather, Becker, Bardons & Oliver, and many others. One man operating two Potter & Johnson machines was turning down wheel hubs at the rate of 5½ per hour per machine. Operatives are now making about 3 fr. per hour working on an 8-hr. basis. These Potter & Johnson machines were formerly used on shell making and many of them have reached the point where they need replacing. For the most part the air compressors have been supplied by the Ingersoll-Rand Co. The



Cars Assembled as They Are Moved Along the So-Called Rolling Way

Many American Machine-Tools Are to be Found Among the Machining Equipment

In the Press Department the Chasses Are Formed and Assembled

painting department is installed in a new shop erected since the war. It is wonderfully well lighted and clear. Car bodies are painted pneumatically and are dried in the drying room. Women are doing most of this work.

Citroën is turning out his 10-hp. de luxe car today, f.o.b. works, for about 18,000 fr. At current exchange of 16.55 the equivalent is about $1,090. The 5-hp. car costs, f.o.b. works, about 9550 francs, which at the same rate of exchange amounts to $577.

I know of no plant in France where more attention is paid to the welfare of the employees than Citroën's. The arrangements with regard to eating, first aid, infirmary, amusements, recreation and comfort are in every detail almost the last word. Cooperative facilities exist and the employees are afforded means for securing through purchase many necessities of living in the way of both food and dress at most advantageous figures.

ROLLER BEARINGS IN ROLLING *

Power Consumption in Wire Mill Compared With Plain Bearings Shows Great Savings

BY A. W. MACAULAY

IN a 9-in. wire rolling mill, consisting of eight pairs of two-high mills, the last pair was equipped with roller bearings. The roll diameter is between 260 mm.

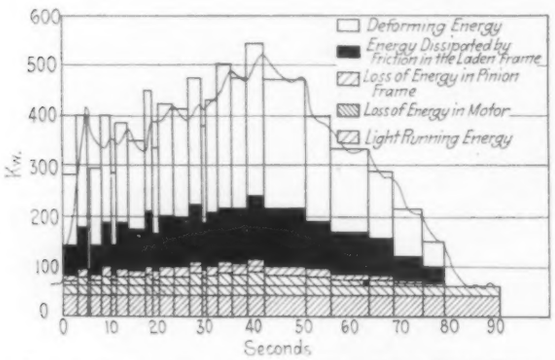


Fig. 1—Energy Consumption, When Using Plain Bearings, of Rolling 5.39-Mm. Wire (No. 5½ Gage) in 14 Passes From 7½-In. Billets, of 0.80 Per cent Carbon Steel and Weighing 110 Lb. The measured maximum load of 520 kw. compares with 545 kw. estimated; the measured energy consumption of 8.0 kwhr. in rolling one billet compares with 8.27 kwhr. estimated

(10¼ in.) and 300 mm. (11.8 in.), and the neck diameter 114 mm. (4½ in.)

To be able to apply bearings of sufficient capacity, the neck diameter was reduced to 90 mm. (3.54 in.) This involved the adoption of chrome-steel shafts, upon which the rolls were shrunk—a practice which has not given any trouble during working. As for the stress

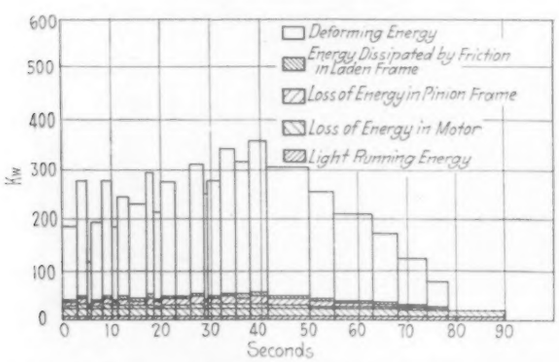


Fig. 2—Energy Consumption With Roller Bearings of Rolling 5.39-Mm. Wire (No. 5½ Gage) in 14 Passes From 7½-In. Billets, of 0.80 Per Cent Carbon Steel and Weighing 110 Lb. The estimated maximum load of 360 kw. and energy consumption of 5.27 kwhr. in rolling one billet may be compared with the plain bearing requirements shown in Fig. 1

in the necks, this would not appear to exceed 5 tons (11,200 lb.) per sq. in., while the average value is probably only about 2½ tons per sq. in. It will be appreciated that in fitting roller bearings the bending moment is somewhat reduced, as the bearing can be brought closer up to the roll.

For results which might be anticipated from an application of this kind, the case of rolling 5.39-mm. (about No. 5½ gage) wire in fourteen insertions from 19-mm. (7½-in.) square billet may be considered. The material is 0.80 per cent carbon, the billet weighs 1 cwt. (112 lb.) and the motor speed is 450 r.p.m.

Regarding the method of estimating the power distribution, the energy absorbed in the roll was figured according to Lang. The power Q in wire rolling is a function of p, the average pressure. The values in this case were obtained from the pressure diagram. To obtain the average load during this time, these p values have been generally reduced by 20 per cent and by 30 per cent for the last frames. It is assumed that the coefficient of friction is 0.06, and that the losses in the coupling pinion frame represent 5 per cent of the total.

Fig. 1 shows the distribution of power as estimated and measured. The bearings being plain brasses all through (with the exception of the flywheel, which was carried on double-row self-alining ball bearings), it will be seen that the agreement is good.

Assuming now that the plain bearings are exchanged for self-alining roller bearings, a coefficient

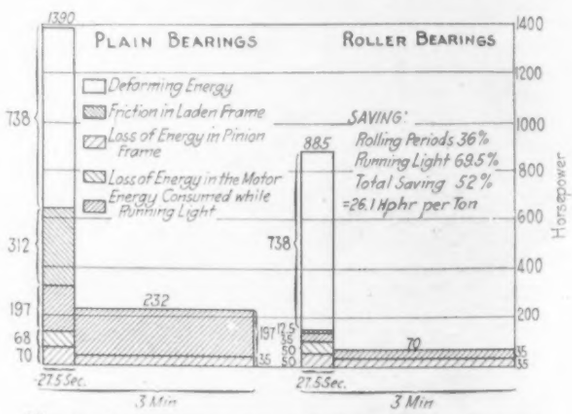


Fig. 3—Savings From Use of Roller Bearings Throughout as Covered by Puppe's Figures Based on a 22½-In. Three-High Mill Rolling in 12 Passes 2-In. Billets Weighing 895 Lb. Each. Consumption of energy per billet was given as 20.4 hphr. for plain bearings and 9.72 hphr. for roller bearings. The numbers alongside areas in the diagram show the hp. required to overcome each part of the resistance

of friction of 0.003 may be expected, and Fig. 2 illustrates the corresponding energy consumption. It will be seen by comparing these figures that the saving is more than 36 per cent, while the difference in maximum load is about 39 per cent.

In the course of these considerations several examples from Puppe's research have been taken and analyzed to determine the distribution of the energy in working. It has been assumed, however, that the energy required for rolling between the two lower rolls is as great as that necessary for rolling between the two upper rolls, which Puppe actually measured.

A typical example is shown in Fig. 3, in which is included the energy consumed by the motor and flywheel. The time during which the rolls run light has been estimated. The right-hand portion of the diagram shows the energy layout when all the plain bearings (including flywheel and pinion frame) are replaced by roller bearings. From this diagram it will be seen that the saving of energy during rolling is between

*From a paper "Some Developments in Ball and Roller Bearing Work," read beford the West of Scotland Iron and Steel Institute at Glasgow.

35 and 40 per cent, and when running light between 60 and 70 per cent. The total saving, which is dependent on the relation between the duration of the light running time and that of the rolling time, lies between 45 and 50 per cent.

If the plain bearings for the roll necks only are replaced by roller bearings, the saving running light will naturally be less, but during working the economy will be about the same as before, that is to say, running light it will be about 45 per cent, and the total saving between 35 and 40 per cent.

Rolling Mill Work in General

Considering the application of roller bearings to mill necks, it is evident that the demands on the bearing will be different in hot and cold rolling, and in the smaller mills the general efficiency and maintenance may be of a higher order. A point of great importance which presents itself at once is the relation between neck and roll diameters. In mill work generally the neck is about two-thirds the roll diameter in hot rolling, but in cold rolling it varies anywhere from 70 to 90 per cent.

Puppe's work shows that many of the necks in the heavier mills investigated by him were only 50 to 55 per cent of roll diameter, and this points to a possibility of applying the roller bearings without any alteration in dimension. For example, the average loads registered in the 570-mm. (22½-in.) train were 70 to 80 tons per journal. Now a roller bearing has been designed of dimensions 300-mm. (11.8 in.) bore and 560-mm. (22 in.) outside diameter by 168-mm. (6.6 in.) wide to deal with such a load at the speed. The existing neck diameter is given as 295-mm. (11.6 in.)

Keeping in mind the fact that the mill may not be operating more than two or three hours per day, a reduction in bearing size can be allowed, giving incidentally a more reasonable thickness of metal between the bearings in the side frames. In considering the extension of the application to heavier work, therefore, the initial difficulties will usually be overcome by a careful review of suitable material, fatigue condition and bearing dimensions.

It is appreciated that the rolling of 0.80 per cent carbon wire may not involve the same neck loads as are present in the working of harder material, and in some plants the wide variation in production in the course of the day involves further complications. One has only to inquire as to the maintenance of such equipment, however, to find the costly character of the operation in many directions, and a frank recognition of this will reveal the strength of the warrant for a trial with roller bearings.

In considering the advantages of such equipment, it will be remembered that the adjustment of the rolls could be carried out with greater accuracy and subsequent readjustment be seldom necessary. This was proved during the tests. The work was more uniform and the scrap greatly reduced. All troubles in the way of water cooling were eliminated, the roller bearings having lubricators fixed on the roll frames and driven from the pinion frames. The grease was under pressure to prevent water or dirt finding its way into the housing. The consumption of grease was trifling.

As for wear, the wire mill equipment has operated for twelve months without the diametric slackness in the roller bearings having sensibly increased.

Investment Value

Taking this case of the wire mill, a rough estimate of the economies from roller bearings may be obtained. Assuming that the wire is soft iron and steel of various dimensions, an average power consumption for this work is 14 kwhr. per ton. The average saving from roller bearings, as shown above, is at least 35 per cent of the power, which equals 4.9 kwhr. per ton. Current in this case costs 0.8d. (1.6c.) per kwhr., and works out per ton as follows:

With plain bearings,	9s. 8d.	($2.32*)
With roller bearings	6s. 0d.	(1.44)
Savings	3s. 8d.	(0.88)

The saving in lubricant comes out at about 3d. (6c.) per ton, and the reduction in maintenance 1½d. (3c.) per ton. These particulars have been obtained from a plant the capacity of which is 10,000 tons per year, and the annual saving would therefore be £1,833 ($8,800).

Complete alteration of an old mill, including bearing housings and the work required for the alteration, would in this case cost £2,000 ($9,600). To this will be added the cost of a number of spare bearings.

*At $4.80 per £.

BUFFALO'S ATTITUDE

Opposed to Considering Assembling Costs in Determining Freight Rates

Commenting on the recent pig iron freight rate hearing before the Freight Traffic Managers' Committee of the Trunk Line Association, as reported in THE IRON AGE of Nov. 8, p. 1243, P. C. Sprague, traffic manager of the Hanna Furnace Co., said:

"Briefly the position of the Buffalo pig iron producers is that since 1914 the rates from Buffalo to New England territory have increased 100 per cent, while rates from Eastern producing points have increased but 92 per cent. If the rate from Buffalo in 1914 of $2.45 per gross ton had been increased by the same amount as the rates from Eastern furnace points, the present rate from Buffalo would have been $4.70 per gross ton or $4.79, depending upon the method employed in arriving at it.

"In addition there are many points in New England located on and north of the Boston & Albany Railroad where the service performed from Buffalo is not over 75 miles greater than from eastern Pennsylvania points (in fact, to some points the distance from Buffalo is shorter) and the present spread of $1.26 in the rate is excessive. In addition water competitive rates are carried from eastern Pennsylvania and Port Henry, N. Y., to Long Island Sound points, but no similar adjustment is accorded to the Buffalo furnaces, and the effect is to give undue advantage, especially during the closed season of navigation when the Buffalo furnaces are unable to utilize water transportation.

"Finally the Buffalo furnaces do not believe that the question of assembling cost on raw material should influence in any way the rates on manufactured products. While this feature was given undue prominence at the conference, there was no definite presentation of the assembling costs in the East based upon actual movements of the raw material. There is no doubt that a very wide range of assembling costs would be developed, but I do not know whether they would be higher or lower than at Buffalo. At some furnaces they may be higher while at other furnaces they may be lower, an indication that the Interstate Commerce Commission wisely excluded the question of assembling costs on raw materials from the category of rate measurements.

"The correct measure of any rate is the service involved on the particular commodity to be moved and this has been accepted by the Buffalo furnaces although they come in competition with furnaces at other Lake ports having lower assembling costs and the Buffalo interests do not urge reduced rates on their products for that reason."

The Freight Traffic Managers' Committee was scheduled to hold a meeting on Wednesday, Nov. 7, to consider what further action, if any, should be taken in the matter of revising pig iron rates, but the meeting was postponed to this week.

Employment Executives Club Entertained by U. S. Ball Bearing Mfg. Co.

Favorable reports on business conditions were made by members of the Employment Executives Club of the National Metal Trades Association, Chicago branch, at the recent meeting in the U. S. Ball Bearing Mfg. Co.'s plant, 4535 Palmer Street, Chicago.

The executives were conducted in parties of eight through the plant by Frank R. Schubert, works manager, learning in detail of the intricate machinery. They were then guests at a dinner served by the company. A. F. Boissoneau, superintendent William Ganschow Co., called for a discussion from visiting executives on these vital topics: Employment, business conditions, wage trend and district activities. The responses gave first hand information about the industries in the Chicago area.

An address of welcome by Works Manager Schubert and short talks by Messrs. Allen and Young of the National Metal Trades Association followed. Committee reports were unanimously accepted. The following new committees were appointed:

Library: Charles L. Wachs, president E. H. Wachs Co.

Education: E. G. Hutton, employment manager Goodman Mfg. Co.

Safety and Sanitation: Charles MacDonald, employment manager Acme Steel Goods Co.

Apprenticeship: C. W. Applegate, general foreman Illinois Tool Works, chairman; S. A. Staskey, employment manager Link Belt Co., and J. Nielsen, personnel director Union Special Machinery Co.

Program: J. Wright, employment manager Kellog Switchboard & Supply Co., chairman; Helen R. Horton, employment manager Wahl Co.

Schools Discuss Apprenticeship Training with Foundrymen

Foundrymen of the "Quad City"—Davenport and Rock Island, Ill., and Moline and East Moline, Ill.—cooperating with those in charge of industrial education in the public schools of those cities, held a meeting Nov. 5 to discuss methods of apprenticeship training. Practically all of the school superintendents and high school principals of the four cities met with the Quad City Foundrymen's Association, this being a preliminary to the November meeting of the association on the 26th, which is to be devoted entirely to apprenticeship training. At this meeting H. A. Frommelt of the Falk Corporation, Milwaukee, is to be the principal speaker. Mr. Frommelt devotes his entire time to this subject and has collected a vast quantity of information regarding results obtained not only in Milwaukee but also in other large industrial centers.

Molybdenum Steels

That molybdenum is one of the most powerful and useful alloying elements in steel has been conclusively demonstrated by experiments conducted by Dr. H. W. Gillett, chief alloy chemist, Department of the Interior, at the Ithaca, N. Y., field office of the Bureau of Mines. While the value of molybdenum as a steel alloy is only beginning to be appreciated and its commercial use is still relatively small, the Bureau of Mines considers that it is destined to become widely used as it deserves to be. The United States has abundant supplies of molybdenum which should be available to replace or supplement other metals used as steel alloying elements which at present must be imported.

The early claims for molybdenum as a specific against fatigue failure of steel, which alleged, directly or by inference, that molybdenum steels were vastly superior to other steels for uses to resist vibration, have not been substantiated in the over-enthusiastic form in which they were made. The Bureau of Mines' experiments show that, with one exception, molybdenum steels, and other alloy steels containing nickel, chromium, vanadium, or a combination of these elements, have equal qualities of endurance, and that no one alloy steel stands out above the others on this score.

The exception is in favor of heat-treated molybdenum steels, for the presence of molybdenum makes the steel require a higher temperature in the drawing or tempering process after quenching, and this higher temperature causes fuller release of quenching stresses. The presence of quenching stresses tends to cause poorer performance under repeated vibration. This, however, is not a very great factor, and has a noticeable effect only in very hard steels, for example, those of spring temper. For ordinary structural uses, no alloy steel is appreciably superior for use against vibration to any other when the steels are used in such sizes that they harden throughout on quenching. Molybdenum and certain combinations of nickel and chromium confer depth-hardening properties on steel, and hence these have advantages for use in parts of large cross-section.

Thus it is evident that, as regards endurance, molybdenum steels are the equals of any, and on some scores have slight advantages, but the advantages are slight instead of large. The choice of a composition of an alloy steel will therefore seldom depend on its fatigue properties.

Concord Axle Co. Going Out of Business

The Concord Axle Co., Penacook, N. H., genuine Concord axles, iron hubs, Brown patent roller bearing axle and hub, is in process of liquidation. The company's product is used in connection with horse-drawn vehicles, and the present use of motor-driven vehicles is the fundamental reason for the company's decision to retire from business.

The plant consists of the following departments: general forge shop equipped with oil-burning furnaces; axle finishing shop; iron hub finishing shop; roller bearing shop; foundry and pattern shop. Each department is well equipped, some of the machinery being especially designed for the company's manufacturing practice. Power is developed from water, but a complete auxiliary steam plant is in operation. Plant and equipment will be sold.

The winding up of the company's affairs will eliminate one of New England's oldest industries. The manufacture of wagon axles on the site of the present plant dates back to 1835. Axles for local use only were produced up to the close of the Civil War, when D. Arthur Brown purchased an interest in the business. Shortly afterward the capacity of the plant was materially increased. Following the death of Mr. Brown in 1903, management passed to his son, Henry A. Brown, who has continued as treasurer and general manager. J. E. Fernald is president and Edmund H. Brown clerk. The company maintained offices in San Francisco and in Melbourne, Australia.

Iron from Pyrite Electrolytically

W. B. Timm, chief of the division of ore dressing and metallurgy of the Dominion Department of Mines, has announced that the Canadian Government is building a laboratory at Ottawa for the purpose of continuing the experimental work, initiated at the laboratory at the Trail smelter, of manufacturing iron electrolytically from the pyrite and pyrrhotite tailing of Canadian copper, nickel, and lead-zinc ores. Some 15 months ago, S. G. Blaylock, managing director of the Consolidated Mining & Smelting Company, announced that an exceedingly pure iron had been made in the laboratory at the Trail smelter from the tailing of the company's Sullivan mine ore and that an electrolytic process had been used in the manufacture of the iron. At the present time, the mill at the Sullivan mine, at Kimberly, B. C., is producing daily more than a thousand tons of tailing, which is composed mainly of pyrrhotite and will average in the vicinity of 40 per cent of iron. Should it be found to be desirable the iron content could be raised slightly without great additional cost.

Workable Employee Suggestion System

Two Years of Successful Operation at Remy Company's Plant—Campaigns Conducted Quarterly—Time Studies Used in Figuring Awards—System Administered by Committee

BY L. W. TOMLIN*

WHEN the Remy Electric Co., Anderson, Ind., decided to inaugurate an employee-suggestion system it wanted to make sure that the system would be longer lived than is usual in connection with such campaigns. Two years have passed since the company put its present plan into force, and today there is more interest and active participation in the campaign than at any previous time since its inception.

In inaugurating the system it was realized that it would be a big task and take considerable educational work to get the employees trained to the idea of studying their jobs and their plant with the object of submitting valuable suggestions in the way of improvements. Therefore, when the campaign was started the company was not discouraged and ready to discontinue the plan because the suggestions submitted were at first few and sometimes of little consequence. The plans were set to make the suggestion system an institution. The company gave it plenty of publicity on the bulletin boards and in "The Remy Clan," its shop paper. Many unique ways of conducting the work were devised, and it was not many months after the inauguration that the system was producing results far beyond the original expectations.

Attempts have been made by many companies to elicit from their employees worth-while suggestions making for improvement in manufacturing processes and product. Usually, however, the systems inaugurated to this end have been short lived. An example of a system that was thoroughly planned and well administered, and which after two years of operation still is marked by active employee participation, with gratifying results to the management, is outlined in the accompanying article by Mr. Tomlin.

Campaigns of this nature, it is known, are not new. They have been tried by many different companies with various results. However, the series of successful campaigns conducted by the Remy company for over two years, despite the customary high mortality rate, indicates that if given the proper thought and enthusiastic backing, then the results to be derived are incalculable. The plans were patterned from the best of the prevailing suggestion systems supplemented by ideas originated within the company. Just as the Remy company has profited by the experience of others, so too it is hoped that any concern contemplating such work may get helpful ideas from the following summary of the Remy suggestion campaigns.

How the Campaigns Are Conducted

Four times during the year, for a period of one month each time, the Remy suggestion campaigns are conducted. A suggestion box is placed on the bulletin board of every department for the convenience of the employees. Every man and woman on the payroll is eligible to participate. At the beginning of each campaign period the foremen distribute suggestion blanks to every member of their departments.

The blanks are intended to provide each employee with a convenient method of submitting his suggestions and at the same time they act as a reminder to each person that a suggestion campaign is again taking place. The blanks are perforated, forming two sections, each containing the same serial number. One part is turned in with the suggestion and the other piece is kept for reference. Complete instructions for the submitting of suggestions are contained on each blank, which explain the kind of suggestions desired in five classifications, namely: (1) Improvement of product, (2) reduction in cost, (3) improvement in manufacturing methods, (4) reduction in accident or fire hazard, and (5) conveniences. When employees submit suggestions they are asked to indicate under what class they believe the suggestion belongs.

During each campaign the suggestions are collected from the boxes once a week and the committee which decides on them meets at such times, or oftener, as the work requires. Every suggestion that is submitted is carefully considered and those folks who do not get an award are advised either in person or by mail as to why their suggestion was not accepted. The minimum award is $5 and the maximum depends on the merit of the suggestion itself. As much as $250 has been paid for a suggestion at the Remy plant.

Merit in the Periodical Campaign Idea

Instead of leaving the suggestion boxes up regularly, as previously mentioned, periodical campaigns are conducted, which gives the company an opportunity to make an event of their suggestion system every few months. If the boxes were up all of the time they would become commonplace, it was thought. This way, interest in the matter of submitting suggestions is renewed each time. Before the boxes are put up at the beginning of a campaign or taken down at the close, a series of large posters are placed on the bulletin boards announcing the opening or closing. The plant paper, which is published every other week, also gives an added opportunity to call the campaign to the employees' attention.

Some may argue that this periodical campaign idea is not a good plan as an employee might hit upon a valuable suggestion in between and be obliged to wait two months for the next appearance of the suggestion boxes. To meet such cases the employees have been advised that should they have a suggestion which they think is worthy of immediate action they are welcome to send it in at once. However, there have been very few of these received and the Remy company claim the most noteworthy suggestions are submitted while the regular campaigns are in force.

The suggestion blanks are distributed by the foremen so that each employee will know that the foremen are behind the plan and that, therefore, the men need not be timid about making suggestions. This they might be if the idea did not have the foremen's moral support. When there is no timidity everyone feels freer to express himself.

Employees having a good suggestion to offer and not knowing just how to put it in writing are encouraged to send through a form, sign their names, and say they want to see a member of the committee. This plan

*Chairman of suggestion committee, Remy Electric Co., Anderson, Ind.

has uncovered a great many valuable ideas that would otherwise have gone unknown. Even in a plant like the Remy Electric Co., where there are more than 3000 employees, practically all native-born Americans, able to write intelligently, it is difficult for some to put their thoughts on paper. Especially so when a suggestion has to do with a complicated machine. In such instances, it appears, the employees would sooner demonstrate their suggestions personally at the job affected.

It may be noted that the Remy suggestion plan has been continually referred to as "campaigns" and not "contests." Inasmuch as all the suggestions are judged on their respective merits the Remy company maintain there is nothing spectacular in the way of a so-called contest about their system. They do not want their folks to feel they are playing a game of wits in competition for money prizes when they enter a suggestion, therefore all literature and announcements feature their suggestion periods as the January or April suggestion campaign, and so on.

Committee Administers Suggestion System

A committee of five, made up of the assistant to the general manager, the assistant chief engineer, the director of personnel relations, the head of time studies, and the plant auditor, administer the suggestion work. Several of their meetings are in the form of a trip through the plant to interview personally the suggestors on their job and thereby encourage them. The committee has a method of classifying all suggestions in three groups before they are discussed. These three classes are, first, an entirely new thought, second, an improvement and third, miscellaneous ideas. If the suggestion has to do with an operation a time study is made on the suggested plan against the existing method of operation and the award made accordingly.

To arrive at a certain fixed amount for the rewards, so that suggestions will be equally compensated, the committee has set a three-month period as fair to all. Inasmuch as time studies on all jobs at the Remy plant are continually made and also since its process department is regularly making improvements on various machines, the three-month period was considered a fair average. Therefore, whatever amount is saved over this period by any suggestion submitted, the suggestor is given a percentage of this saving.

On all other suggestions, the value of which cannot be computed by the time study method, such as an improvement in the product, new safety idea, a factory convenience, etc., the committee decides its worth and if adopted pays a fair reward. To make the time that suggestors spend in thought and preparation of suggestions worth while, the committee has arrived at the $5 minimum award. They maintain if the suggestion is at all worthy of adoption surely it merits at least this amount.

Every suggestion is acknowledged either with a check signifying its adoption or else an explanation as to why rejected. Rejections are not handled in a perfunctory manner but a real explanation is given the suggestor as to just why the suggestion cannot be used. In the folks whose suggestions they have to reject the committee recognize good material for future suggestions and they couch their replies in encouraging terms, explaining in detail just what sort of suggestions are desired from them. Oftentimes the same people come back in the next campaign with ideas that are well worth while.

Employees who receive rewards are usually handed their checks personally by a member of the committee and told to keep up the good work. The method of computing the amount of the reward they receive is explained so that there may be satisfaction all around. Then as an added incentive at the end of each period the names and pictures of those who receive awards are published in the plant paper and are oftentimes made the subject of a bulletin board poster.

It may be interesting to know that about 35 per cent of the employees at the Remy plant are female and it has been estimated that about 30 per cent of the suggestions submitted come from the women and girls.

In addition to the advantages of the suggestion system as effecting a saving to the company, there are many other features that make them desirable. They give employees an opportunity to express themselves some way or other, and this opportunity to speak directly to the management makes them feel like they have more than just a mere job. At many a machine is a man or woman of a retiring disposition who has the capacity for a better job, but because of timidness does not often show his or her worth. Here is where the suggestion system helps out, too. It uncovers good material which would perhaps otherwise go unnoticed. A person who is so disposed oftentimes will enter into a campaign of this nature and come through with some real thoughts. Then there is the employee who claims he never had a chance to show what he has in him. This is his opportunity, and, if he keeps submitting suggestions to show what's in him, sooner or later his ability will be discovered.

It may be safely said that if a suggestion system is conducted in an enthusiastic manner, as outlined above, it will be found to pay for itself many times over.

Steel Corporation's Orders Decline

Unfilled business on the books of the United States Steel Corporation as of Oct. 31 amounted to 4,672,825 tons, or 362,925 tons less than reported for Sept. 30. During September unfilled orders fell off 378,913 tons, in August 496,100 tons, in July 475,498 tons, in June 595,090 tons, in May 307,158 tons, and in April 114,823 tons, while in March they increased 119,343 tons, in February 373,213 tons and in January 165,073 tons. A year ago the unfilled tonnage was 6,902,287 tons, or 2,229,462 tons more than on Oct. 31, last, and the high point of 1922. The corporation has less business on its books than at any previous time since March, 1922. Following is the unfilled tonnage as reported by months since January, 1920:

	1923	1922	1921	1920
Jan. 31.....	6,910,776	4,241,678	7,573,164	9,285,441
Feb. 28.....	7,283,989	4,141,069	6,933,867	9,502,081
March 31.....	7,405,332	4,494,148	6,284,765	9,892,075
April 30.....	7,288,509	5,096,913	5,845,224	10,359,747
May 31.....	6,981,351	5,254,228	5,482,487	10,940,465
June 30.....	6,386,261	5,635,531	5,117,868	10,978,817
July 31.....	5,910,763	5,776,161	4,830,324	11,118,468
Aug. 31.....	5,414,663	5,950,105	4,531,926	10,805,038
Sept. 30.....	5,035,750	6,691,607	4,560,670	10,374,804
Oct. 31.....	4,672,825	6,902,287	4,286,829	9,836,852
Nov. 30.....	.....	6,840,242	4,250,542	9,021,481
Dec. 31.....	.....	6,745,703	4,268,414	8,148,122

The largest total of unfilled orders was on April 30, 1917, at 12,183,083 tons. The lowest was on Dec. 31, 1910, at 2,605,747 tons.

Youngstown Sheet & Tube Co. Plans

The Youngstown Sheet & Tube Co. announces appropriation for new construction at its Indiana Harbor plant, near Chicago, amounting to about $4,000,000, to carry out the improvement program announced some weeks ago.

A new blast furnace, with a capacity of 20,000 tons a month, and two additional butt-weld mills will be erected. The construction of the blast furnace will probably require a year or more, but the tube mills are expected to be in operation by May 1, 1924. This will bring the number of blast furnaces owned by the company to 17, and the number of tube mills to 23.

American De Gama Briquetting Company

To develop in the United States the De Gama process of briquetting metal borings and turnings and such fine material as blast furnace flue dust, the American De Gama Process & Machinery Corporation has been incorporated with headquarters at 347 Madison Avenue, New York. The De Gama process was described in the issue of THE IRON AGE of Aug. 23, 1923. Count D. V. De Gama is president and technical manager. Robert Parkinson, a graduate of the United States Naval Academy, is secretary and treasurer.

The Iron and Steel Industry of Japan*

Sources of Supply of Raw Materials—Much Dependence Placed on the Asiatic Mainland—Water Power Not Dependable

BY DR. ING. E. KOTHNY

WITH the opening of the country and its development into a world power the industrialization of Japan began and demand for pig iron and steel increased. On account of the gradual progress in technical education of the Japanese, a rapid development of the steel industry was not possible. The

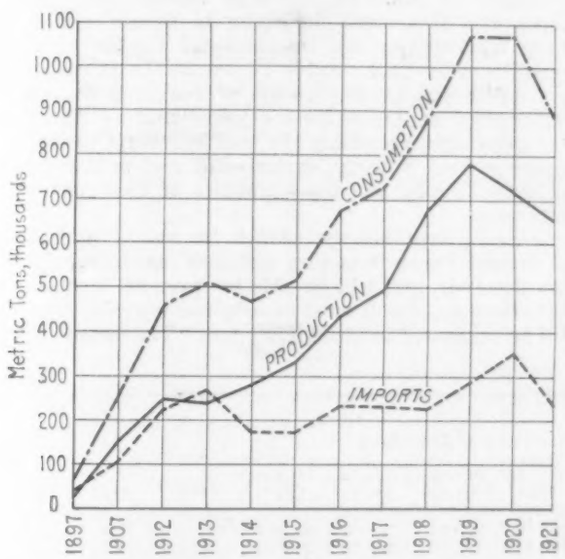


Fig. 1—Pig Iron Production, Imports and Consumption of Japan, Including Korea and Manchuria. Lessening dependence on imports is indicated. (Note that the two first intervals are 10 and 5 years respectively)

foundations of a steel industry capable of tonnage production and of meeting competition are:

1. Sufficient deposits of ore of proper metallurgical quality in the country itself, or an assured supply of ores from other countries;
2. Sufficient deposits of coal, which to a certain extent must be good coking coal. Large sources of water power may partly take the place of coal;
3. An assured domestic market for iron and steel.

How is Japan situated in regard to these three fundamental conditions?

Ore Supply

Japan's deposits of ores suitable for smelting are comparatively small. Table I shows the iron and ore supply, published by Inone Kinosuke at the eleventh International Geological Congress in Stockholm, 1910. The ore supply of Korea has since been estimated higher, on the basis of recent investigations, and is now assumed at 50,000,000 tons. There is a probability of a further increase. But Japan herself, i.e., the main islands, already has been explored thoroughly, and a higher estimate for these parts cannot be expected.

The principal iron ore deposits of Japan are located in the northern province (Kamaishi mines). Smaller deposits are found in the province of Iwate (Senin and Kuriki) and on Hokkaido Island (Abuto). Besides these are rich deposits of magnetite sand in the Chugoku district in the southwestern part of the main island, which formed the basis of the ancient Japanese iron industry. But the mining of ore from the deposits of Senin, Kuriki and Abuto is profitable only when ore prices are high.

Sources for Past Ten Years

Table II, which represents the consumption of ore for Japan's iron industry and the source of these ores for the past ten years, shows that the mining of ore in these districts was of importance only during war times—when iron and steel prices were high. The use

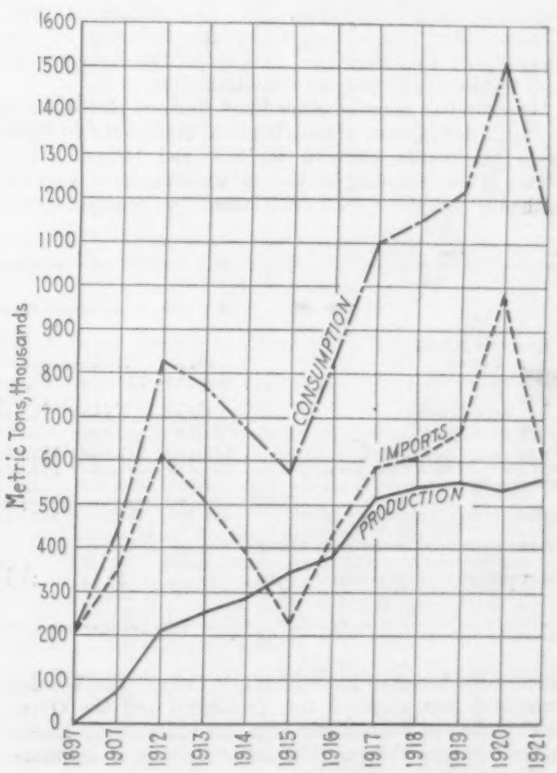


Fig. 2—Steel Production, Imports and Consumption of Japan, Including Korea and Manchuria. Except in 1915, imports have exceeded production. (Note that the two first intervals are 10 and 5 years respectively)

of the magnetite sand cannot be considered for smelting in a coke blast furnace; it can form a basis in the manufacture of only special quality pig iron and steel in an electric blast furnace or an electric steel furnace. Even if further ore deposits are discovered in Korea, a continuously assured supply to meet Japan's domestic demand for pig iron cannot be guaranteed from the deposits of the country.

When Japan began to create its own steel industry, the first endeavor was to insure the necessary ore supply from other countries. It turned its eyes first to China, which contains almost unlimited ore and coal deposits. These endeavors had the ardent support of the Japanese Government.

Chinese Ores

It succeeded during the World War, through the Chinese-Japanese mining agreement of June, 1918, in

*Translated from *Stahl und Eisen*, June 14 and 21, 1923, by Paul Cebrat, Perin & Marshall, New York.

securing valuable concessions for the exploitation of Chinese ore and coal. Japanese steel works, organized during these years, have contributed money and labor to Chinese mining enterprises to supply their blast furnaces. The first ore deposits thus utilized were those in the Yangtse valley. The Government steel plant at Wakamatsu made a contract, soon after its organization, with the Hanyehping Co. for exploitation of the Tayeh ore mines. The body of these mines, furnishing an ore low in phosphorus and sulphur, with an iron content of 52 to 63 per cent, is estimated to contain at least 100,000,000 tons. The equipment today is such that, besides supplying the furnaces of the Hanyehping Co., they can furnish to the Government steel works about 600,000 tons annually.

Table I.—Iron Ore Deposits

(Figures in millions of metric tons actually determined; in addition, there is a small amount estimated to exist elsewhere.)

Part of Country	Kind of Ore	Ore	Iron Content
Islands	Magnetite, Hematite	55.6	28.0
Korea	Magnetite, Hematite	4.0	2.0
Total		59.6	30.0

In a similar manner other blast furnace plants, built in Japan during war times, Wanishi Ironworks in Hokkaido (Hokkaido Seitetsu K. K.) and Orient Steelworks (Toyo Seitetsu K. K.) in Kyushu, have secured their ore supply for a long time by acquisition of Chinese ore mines or partnership in them. The Wanishi Ironworks has acquired the Tsaishidji and the Orient Steelworks the Taudchung iron ore mines, both located in the Yangtse valley. The latter deposit is estimated at 20,000,000 to 30,000,000 tons.

Ores from Manchuria

Nor did the ore deposits of Manchuria escape the attention of the Japanese; in the province of Penshi-hu are rich deposits of magnetite. In addition there is between Mukden and Kirin a range of hills (south of the Tiehling) rich in iron ore. While the ores of Central China can be transported from the mines to Japan almost exclusively by water, those of Manchuria have to be taken a long way by rail to the sea. In some places in Manchuria are coal deposits in the vicinity of the ore deposits, which furnish a coking coal. Anthracite is found near Yentay, bituminous coal and anthracite near Penshi-hu, gas coal near Kuang-Chentse and Dalai-Nor as well as at the Trans-Baikal border.

Smelting of Manchurian ores was begun in that country on account of the expensive transportation of these ores to Japan. In 1915 the Honkeiko plant was established for the exploitation of the Penshi-hu ores by the Japanese firm Okura. In 1918 the South Manchurian Railroad started construction of the An-Shan plant, to use the ores from Tungshi-An-an, Tichshi-han, Tuimihen-shan, Hsiuolingtsu, Takushan, Lingmen-shan, Singtaoyan and Wangchiahotau.

The ores of Penshi-hu are high-grade magnetites with 50 to 60 per cent iron. The South Manchurian Railroad ores are only to a small extent high-grade magnetite, but are mainly magnetite with an iron content of only 30 to 40 per cent. These ores are highly silicious and have to be pre-treated to make them suitable for blast furnace smelting.

While, therefore, the situation regarding a domestic ore supply was not favorable for a Japanese steel industry, the Japanese have succeeded, nevertheless, with the effective assistance of their Government, in assuring an ore supply for their steel industry which should render it possible to meet home consumption of iron and steel. It can be assumed that, with the technical perfection of the iron mines and equipment, the cost of the ore will not be higher than in other iron producing countries.

Power Supply—Coal

Table III indicates the coal deposits of Japan, Korea and Manchuria according to figures given by Inone Kinosuke at the International Geological Congress, Canada, 1913. Table IV shows the annual coal production, import and export of coal and the home consumption of Japan for the years 1912 to 1921. It also gives data regarding the coal consumption by the Japanese steel industry, exclusive of coal used in blast furnaces as coke and the quantities of coal converted into coke.

Japan's coal supply cannot be called unlimited. At present Japan is mining sufficient coal to supply its own demands, and will be able to cover an increase in consumption. But it must be assumed that the deposits will be exhausted in about 150 years. The largest number of Japan's coal deposits furnish a bituminous anthracite, which can be used only to a very limited extent for conversion into blast furnace coke.

Consequently even today considerable coal for this purpose is imported from other countries, principally China, whence the supply is assured through the above mentioned Chinese-Japanese agreement. The coal deposits of Manchuria are almost exclusively in the hands

Table II—Consumption and Source of Iron Ores
(In Metric Tons)

Iron Ore Mined Japan	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Kamaishi	130,470	136,350	99,500	79,570	97,070	148,420	143,680	115,430	131,130	65,130
Abuto	.....	.....	10,600	20,790	22,660	27,560	69,460	98,740	37,680	.....
Senin and Kuriki	8,300	9,800	9,700	10,140	14,860	14,510	18,550	20,110	14,970	1,470
Other provinces	14,300	6,800	1,700	8,440	5,360	77,100	141,100	128,660	131,070	20,380
Korea	122,500	142,050	182,030	209,940	245,420	152,930	430,790	417,000	447,250	232,690
Imported from China	195,650	277,880	297,180	308,070	279,220	295,690	360,930	595,140	650,520	439,770
Other countries	2,590	2,210	1,690	710	580	1,190	1,230	25,930	11,840	138,290
Consumption, Japan and Korea	473,700	575,250	602,540	637,680	665,160	717,410	1,171,060	1,401,040	1,424,480	897,730
Average price, Chinese and Korean ore, in yen	5.63	5.47	5.21	5.59	5.70	8.10	24.30	24.10	18.20	15.30
Average price of pig iron in yen	.....	50.00	49.00	58.00	89.00	215.00	406.00	164.00	133.00	78.00

Table III—Coal Deposits
(In Millions of Metric Tons)

Government District	Actually Determined: Anthracite	Actually Determined: Bituminous	Actually Determined: Lignite	Probable: Anthracite	Probable: Bituminous	Probable: Lignite	Total
Mezoic	4	....	..	37	10	...	51
Karafuto	..	17	..	...	1,345	...	1,362
Hokkaido	..	336	..	...	2,106	233	2,675
Honshu	1	1	67	20	14	478	581
Kyushu	..	542	..	...	2,374	...	2,916
Formosa	..	....	..	...	385	...	385
Japan total	5	896	67	57	6,234	711	7,970
Korea	7	1	5	33	13	22	81
Manchuria	..	409	..	68	731	...	1,208
Total	12	1,306	72	158	6,978	733	9,259

Table IV—Production, Import and Export of Coal
(Amounts in 1000 Metric Tons)

	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Coal mined	19,638	21,315	22,293	20,491	22,902	26,361	28,029	30,300	29,245	26,220
Coal imported	331	576	958	615	556	713	769	715	810	777
Total supply	19,969	21,891	23,251	21,106	23,458	27,074	28,798	31,015	30,055	26,997
Exported	3,469	3,871	3,587	2,924	3,017	2,813	2,197	2,016	2,146	2,387
Home consumption	16,500	18,020	19,664	18,182	20,441	24,261	26,601	28,989	27,809	24,610
Consumed in the steel industry (except coke)	.....	.....	.....	.....	.....	.....	1,183	1,015	1,300	.....
Converted into coke	.....	.....	.....	859	.....	1,026	1,600	1,692	1,485	.....
Average price in yen	.....	9.02	9.03	10.60	10.44	21.78	21.42	32.78	25.00	22.00

Table V—Production, Imports, Exports, Home Consumption and Source of Pig Iron
(Amounts in 1000 Metric Tons)

Character of Production	1897	1907	1913	1914	1915	1916	1917	1918	1919	1920	1921
Coke } Japan	26.1	145.5	240.3	300.2	317.7	388.7	411.3	446.7	520.1	444.0	437.0
Charcoal } Japan							18.2	37.5	47.0	31.2	13.5
Synthetic and electric	....	.....	....	....	....	....	21.2	98.6	28.4	45.9	25.4
Korea coke	....	....	....	....	.....	.....	.....	42.7	78.4	84.1	83.0
South Manchuria coke	....	....	....	....	29.9	49.0	38.6	45.7	106.1	116.0	93.9
Total	26.1	145.5	240.3	300.2	347.6	437.7	489.3	671.2	780.0	721.2	652.8
Imported	39.0	103.4	265.1	169.1	166.8	232.0	232.2	225.1	283.2	348.6	227.1
Production and imports	65.1	248.9	505.4	469.3	514.4	669.7	721.5	896.3	1,063.2	1,069.8	879.9
Exported	....	0.4	0.4	0.2	0.4	1.6	3.3	1.1	1.9	2.5	....
Consumption	65.1	248.5	505.0	469.1	514.0	668.1	718.2	895.2	1,061.3	1,067.3	879.9
Origin of import											
China	....	....	59.9	55.2	82.9	102.4	109.8	157.7	95.2	140.7	76.2
England	....	....	99.4	60.2	36.7	31.6	5.5	17.8	44.8	58.6	22.6
Germany	....	....	11.3	6.3	....	0.4	....	....	....	0.5	3.4
Sweden	....	....	12.1	11.2	6.7	2.8	3.8	4.2	10.8	14.2	18.1
America	....	....	0.5	3.2	1.0	3.7	24.8	13.0	35.6	35.5	1.2
India	....	....	81.9	31.4	38.0	62.8	61.1	7.1	28.9	47.9	34.4
Other Countries	....	....	....	1.6	1.7	28.5	27.3	25.2	68.0	51.2	71.2
Production in per cent of consumption	40.0	58.0	47.6	64.0	67.6	67.0	68.0	75.0	73.7	67.5	74.0

Table VI—Production and Imports of Rolled Steel, Forgings and Steel Castings
(In Metric Tons)

Material	1913		1914		1915		1916		1917		1918		1919		1920		1921	
	Production	Imports	Production	Imports	Production	Imports	Production	Imports	Production	Imports	Production	Imports	Production	Imports	Production	Imports	Production	Imports
Merchant bars	76,250	203,960	78,070	154,330	58,620	58,620	134,160	143,280	123,760	.....	140,730	.....	118,610	.....	123,830	.....	126,150	.....
	27.2%	72.8%	33.6%	66.4%	50.0%	50.0%	48.4%	51.6%										
Shapes	.....	.....	.....	.....	.....	.....	.....	.....	94,490	182,020	80,620	232,640	69,360	162,400	89,290	273,970	115,630	159,120
	.....	.....	.....	.....	.....	.....	.....	.....	72.8%	27.2%	48.8%	51.2%	53.6%	46.4%	43.8%	56.2%	61.2%	38.8%
Plates and sheets	58,010	155,590	46,490	134,720	86,620	120,810	71,930	203,310	77,320	329,050	91,370	190,560	143,930	281,100	124,180	451,930	135,500	284,350
	27.1%	72.9%	25.7%	74.3%	41.8%	58.2%	26.1%	73.9%	19.0%	81.0%	32.4%	67.6%	33.9%	66.1%	21.6%	78.4%	32.3%	67.7%
Tubes	.....	44,240	.....	28,540	(1)	7,470	13,070	12,090	15,340	18,640	22,990	30,070	16,370	24,030	19,220	38,890	18,510	27,990
	.....	100.0%	.....	100.0%	.....	.....	51.9%	48.1%	45.1%	54.9%	43.3%	56.7%	40.5%	59.5%	33.1%	66.9%	39.8%	60.2%
Rails	48,670	60,760	67,310	27,710	59,110	8,770	51,710	4,220	75,350	1,010	56,510	67,770	61,340	120,290	55,900	115,930	59,860	56,280
	44.5%	55.5%	70.8%	29.2%	87.1%	12.9%	92.5%	7.5%	98.7%	1.3%	45.5%	54.5%	33.8%	66.2%	32.5%	67.5%	51.5%	48.5%
Wire, black and galvanized	(1)	34,350	(1)	30,750	(1)	34,710	28,270	40,150	31,240	48,160	34,660	60,750	22,640	66,110	31,100	72,800	26,440	48,510
	.....	.....	.....	.....	.....	.....	41.3%	58.7%	39.3%	67.7%	36.3%	63.7%	25.5%	74.5%	30.0%	70.0%	35.3%	64.7%
Other finished products	(1)	17,080	(1)	11,100	(1)	650	25,650	23,800	13,540	5,930	22,970	21,900	40,790	6,250	12,630	25,670	(2)	30,750
	.....	.....	.....	.....	.....	.....	51.9%	48.1%	69.2%	30.8%	51.2%	48.8%	86.7%	13.3%	33.0%	67.0%	.....	.....
Forgings	(1)	.....	(1)	.....	(1)	.....	.....	.....	51.270	.....	49,500	.....	36,110	.....	48,800	.....	35,900	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Steel castings	(1)	.....	(1)	.....	(1)	.....	53,300	.....	23,330	.....	31,750	.....	33,810	.....	29,690	.....	30,140	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Special steel	(1)	.....	(1)	.....	(1)	.....	3,140	.....	7,290	.....	8,520	.....	9,660	.....	2,810	.....	11,970	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	254,950	515,980	282,520	387,150	342,870	231,010	381,230	426,850	513,430	584,810	539,620	603,690	352,620	660,180	537,420	979,190	560,100	601,000
	32.2%	67.8%	42.2%	57.8%	59.7%	40.3%	47.2%	52.8%	46.8%	53.2%	47.2%	52.8%	45.5%	54.5%	35.4%	64.6%	48.2%	51.8%

NOTES. Imports represent total imports less exports; % indicates % of home production in total consumption.
(1) Material produced, but not recorded. (2) Imports not separated.

Table VII—Country of Origin of Imports Into Japan
(Iron and Steel in Metric Tons)

	U. S. A.	China	Germany	England	Belgium	Sweden	Other Countries	Japanese Exports
1912	191,700	20	177,900	177,000	.....	4,160	67,700	9,300
1913	97,060	4	197,200	162,000	.....	6,600	66,300	11,600
1914	65,000	....	161,200	115,500	.....	4,180	50,000	11,300
1915	137,000	520	64,500	87,000	.....	4,800	4,450	11,800
1916	279,600	4,200	3,810	115,300	.....	13,300	4,540	14,200
1917	580,300	8,700	....	24,200	.....	4,480	7,090	31,100
1918	625,000	11,300	220	6,820	.....	1,870	4,980	47,300
1919	645,500	1,070	....	69,880	.....	3,470	1,310	61,200
1920	857,800	12,400	1,880	140,600	.....	3,660	3,400	44,600
1921	455,000	1,170	39,250	98,500	24,330	4,060	2,270	23,700

of the Japanese and more particularly of the South Manchurian Railroad, which in Fushun (Bujun) alone mines 2,300,000 tons, or 70 to 80 per cent of the total coal produced in Manchuria. While, therefore, sufficient coal is available at home for steel making, Japan must depend even now on foreign countries for coking coals, in order that the home supply may not be too quickly exhausted.

Water Power

According to estimates Japan has available water power totaling 5,000,000 hp., only 1,200,000 being utilized to date. Hydroelectric power already in use in the steel industry furnishes power for electric furnaces for the manufacture of pig iron, steel and ferroalloys.

In her water power Japan has the disadvantage that the amount of water is subject to considerable fluctuation; the difference between high and low water level is consequently very great. The total available water power cannot be considered so high that this source of energy could be expected to be an important factor.

Home Consumption of Iron and Steel

Diagrams 1 and 2 and tables V, VI and VII show Japan's consumption of pig iron and steel for the years 1897 to 1921 and 1912 to 1921 respectively. They show to what extent demand has been met by production at home and by importation. The pig iron imported from Manchuria has been included in Japan's production. Tables V and VII further indicate the country from which the material was imported. Table VIII illustrates the quantities and value of machinery imported into Japan from 1912 to 1921. Tables VI and VII give detail information regarding production and import of the different kinds of iron and steel products.

From these diagrams and tables it is evident that there is sufficient home demand for pig iron and steel to form the basis of a national steel industry.

(In the following installment a brief description will be given of the development of the Japanese steel industry.)

Table VIII—Japanese Imports of Machinery and Machine Parts
(Tons Are Metric, Where Given)

	1912		1913		1914		1915		1916		1917		1918		1919		1920		1921	
	Tons	1000 Yen	Tons	1000 Yen	Tons	1000 Yen	Tons	1000 Yen	Tons	1000 Yen	Tons	1000 Yen	Tons	1000 Yen	Tons	1000 Yen	Tons	1000 Yen	Tons	1000 Yen
Railroad equipment	.....	3,132	.....	2,075	.....	1,981	.....	619	.....	299	.....	2,219	.....	3,097	.....	6,783	.....	7,117	.....	5,255
Automobiles	.....	894	.....	1,110	.....	498	.....	165	.....	713	.....	2,667	.....	7,673	.....	11,282	.....	10,478	.....	8,067
Bicycles	.....	2,002	.....	2,134	.....	1,035	.....	313	.....	477	.....	710	.....	1,500	.....	2,580	.....	6,720	.....	6,411
Marine equipment	25	3,949	20	4,000	13	2,842	10	2,634	15	10,418	22	8,892	21	3,448	15	468	3	258	3	262
Boilers	.....	1,175	.....	976	.....	860	.....	570	.....	1,367	.....	2,711	.....	7,466	.....	8,336	.....	6,680	.....	7,862
Economizers	627	84	947	146	598	84	421	62	552	119	873	172	471	131	751	272	1,518	614	3,433	1,510
Locomotives	.....	801	.....	2,386	.....	447	.....	228	.....	121	.....	112	.....	398	.....	408	.....	915	.....	1,910
Locomotives-Narrow Gauge	89	33	82	35	43	25	19	89	11	6	.....	.....	11	75	31	24	165	180	.....	.....
Steam engines	.....	524	.....	633	.....	616	.....	78	.....	262	.....	563	318	738	802	1,377	.....	2,194	.....	2,083
Gas engines	5,295	1,390	1,988	1,261	485	366	142	163	164	180	118	263	233	493	229	966	1,061	4,771	480	1,111
Hydraulic machinery	1,607	809	1,347	729	539	322	139	116	124	115	363	306	66	82	948	1,787	457	779	1,137	1,600
Motors	5,028	3,199	5,352	3,659	3,304	2,407	587	501	305	392	865	1,130	1,857	2,907	2,738	5,246	3,323	6,080	4,762	9,664
Sewing machines	1,228	1,210	878	810	162	219	225	243	492	790	723	1,001	1,816	2,948	2,590	4,765	3,161	6,321	1,574	3,170
Machine tools	7,559	3,966	5,971	3,279	4,555	2,480	1,434	891	1,599	1,783	3,744	3,452	5,165	6,533	6,145	10,563	8,687	13,650	7,159	10,977
Textile machinery	4,306	1,802	13,708	5,097	12,449	5,332	2,755	1,336	3,922	2,408	8,748	4,971	10,844	8,545	13,028	13,864	18,353	18,163	30,946	29,180
Other machinery	.....	13,549	.....	16,807	.....	10,793	.....	4,098	.....	7,719	.....	13,770	.....	22,980	.....	12,243	.....	17,199	.....	17,499
Total	.....	38,519	.....	45,137	.....	30,307	.....	12,107	.....	27,167	.....	42,939	.....	69,104	.....	80,964	.....	102,119	.....	107,161

Swedish Industry Well Engaged

BERLIN, GERMANY, Oct. 29.—The Swedish export of iron ore has considerably decreased this year. The adverse conditions in Central Europe are to a great extent responsible for the decline. The situation in the Ruhr and the standstill of production in the occupied area has influenced export activity considerably and though exporters have successfully fostered trade with other parts of Europe, exports have decreased.

The developments in the Ruhr problem are therefore followed with intense interest in Sweden and an improvement in the ore industry is expected as soon as the factories in the occupied area are in full working order again and the political situation in Europe more settled. The iron industry on the Ruhr and in Westphalia formerly absorbed about 65 per cent of the exports. During the first nine months of this year the largest exporter of ore, the Grängesberg Gesellschaft, which handles about four-fifths of the total production, shipped 3,250,000 tons against 4,160,000 tons during the same time last year, and September shipments totaled 246,879 tons compared with 380,354 tons during August.

The greatest part of the Swedish shipments to Germany are going to Stettin. The shipments destined for the Ruhr districts, which are going to Emden and Amsterdam, have greatly diminished, but the movements to Stettin have increased. The German imports of ore via Stettin totaled 1,551,833 tons in 1913. During 1919 they decreased to less than 400,000 tons and amounted to 632,608 tons last year. This year they have been about 1,250,000 tons till October, and it is expected that they will reach the pre-war figure by December.

The Swedish engineering industry is generally fairly well employed. The electrical industry and the dockyards are busy and have taken on more men. German quotations are in many cases more than 30 per cent below Swedish prices, but the delay in delivery has diverted many orders to Sweden.

Industrial Engineers Elect Officers

New officers were elected, and the date of the next annual convention announced at the annual meeting of the board of directors of the Society of Industrial Engineers, held in New York.

W. G. Sheehan, president Crystal Corporation, Detroit, was elected president of the society and Edward T. Miller, executive secretary United Typothetae of America, treasurer. George C. Dent continues as executive secretary. W. W. Nichols, D. P. Brown & Co., Detroit, and F. E. Rein, consulting engineer, Philadelphia, take office as directors.

The eleventh annual convention will be held in Buffalo from April 30 to May 2.

How to Succeed with the Eight-Hour Day

Superintendent of Open-Hearth Department of Donner Steel Co. Says Absolute Confidence of Men and Management Is Necessary—Relates His Experience

BY KENT HARRISON

THE successful application of the eight-hour day to the steel business is contingent upon the vital factor of absolute confidence between the employees and the management. This implies the complete acceptance on the part of the management of the idea that the men are ready and willing to do their part. It also implies, on the part of the employees, a belief in the just and even considerate attitude toward themselves on the part of the management.

Men are, as a rule, sincere and constructive in their attitude. If, with all this, they are in error, they will respond to the efforts at correction if time and patience are applied to their enlightenment. A few arbitrary cases, if they exist, will seldom jeopardize the cooperation of the well meaning majority.

The manager whose contact with his organization is only at his office desk, and who, because of this, allows department heads to indulge in inconsiderate treatment of men under them, need not be surprised if his suggestions do not carry conviction. Consistent with a personal contact, the widest possible latitude must be given department heads, governed by the fact that the steel business attracts and requires employees of the greatest diversity of skill and talent.

After 20 years' service in the employ of steel companies and in all grades from laborer to executive head of large departments, I am convinced that 99 per cent of labor troubles in this business is due to misunderstandings between managers or their executives and the employees.

Some years ago, I took charge of an open-hearth plant, the record production of which, up to that time, was 16,000 tons from six furnaces per month. When the manager was asked to explain the cause of this low production, he replied: "The men are no good. You will have to get some good men." Afterwards, the same men doubled this production.

Thirty days before we made the move from 12 to 8 hours at the Donner Steel Co., where my position is open-hearth superintendent, I started an active campaign with my foremen concerning our plans. Everybody wanted eight hours, but no one could see how the money end of it could be arranged. The proposition was made that we could take the same force of men that we had on two 12-hour shifts and make up three 8-hour shifts as nearly as possible. It would give us a better chance to keep up the wages. This was discussed fully with every man in the open-hearth department. We had a daily meeting at which everyone entered the discussion, finally suggesting to the men that they appoint a committee to represent the open-hearth and that we would deal with that department through this committee. Our one aim was to impress on every man that if we were going to hold the wages, we would have to work with fewer men on a shift than we had. It meant that every man had to come in the open-hearth ready and willing to give eight hours' work. We suggested that it would be far better to do this and then get out of the works and spend the time with the wife and children at a show, ball game, etc., than actually to work about four hours out of 12 and then lie around on a plank trying to get in the rest of the turn.

We worked up an approximate rate sheet and presented it to the men so as to give them an idea of what their earnings would be. These rates were based so that, if production was increased, they would profit by it. Our labor force in the open-hearth was cut practically 20 men, dividing 30 men into three 8-hour shifts. I might state that, before this move was made, it was impossible to keep labor for our hot work. Under this plan we have 30 men day in and day out. We did away with our third helpers. We promoted all the second helpers we could to first helping, filled their jobs with third helpers, placing the remainder of our third helpers in the open-hearth labor gang as extra men. We reduced our pit force proportionately, also number of cranes, locomotives and stockers on each shift. This entire change was made with an increase of 8 per cent in men and a saving of 580 man hours, thus making a very small increase in our present payroll.

The shifts change at 7:00 a. m., 3:00 p. m. and 11:00 p. m. This was decided by the men. The week change is made in such a way that every three weeks each man has 32 hours off. This also was voted on and decided by the men. Since this move was made we had no decrease in our tonnage. Our bottom-making time

Started as a Laborer

Kent Harrison, the author of this paper, says:

"Men who work for me are my hobby. Nothing affords me the pleasure that the feeling does that my men are all for me 100 per cent, because then I know I will get results, and I know without this spirit I will not."

Mr. Harrison was educated at the Virginia Polytechnic Institute, Blocksburg, Va., of which State he is a native. He entered the employ of the Tennessee Coal & Iron Co. at Ensley, Ala., as a laborer in 1901, in the blooming mill. He worked through the blooming mill, later as a shearman and soaking pit bottom maker, afterward going to the rail mill as a heater. He gave up the mill, going to the open-hearth as a third helper, working up to first helper, then going to South Chicago, with the Illinois Steel Co. in its open-hearths. He was a melter foreman for a number of years, later going to the Maryland Steel Co. at Sparrows Point as an assistant open-hearth superintendent. He then accepted, with the Hess Steel Corporation, the position of superintendent of electric furnace operations at Baltimore. He afterward accepted the supervision over the electric furnace operations, as well as the forge shops and foundry for the Anniston Steel Co., Anniston, Ala. He remained with this company until the end of the war, at which time he was offered the position of open-hearth superintendent for the Ashland Iron & Mining Co. at Ashland, Ky. Later this plant was taken over by the American Rolling Mill Co., with which he remained for a year, going to the Donner Steel Co. just one year ago as superintendent of the open-hearth department.

has decreased nearly 50 per cent. We have far less actual turnover in men and our trouble from men laying off has practically stopped.

We have a better spirit among our men, manifested in the formation of track and football teams, showing that their time off is being devoted to recreation, which in turn is obliged to reflect in efficiency. I will state that I have never had a more satisfied organization and I believe that the solution to our labor troubles today is fair and considerate treatment, plus a small force of efficient men at a higher rate of pay, rather than a large force of incompetent men at lower pay.

Unfounded Reports as to Steel Stocks in the Ruhr District

German Agents Play Their Part in Attempts to Discourage Activities of American Exporters of Iron and Steel

WASHINGTON, Nov. 13.—Stocks of iron and steel in the Ruhr district of Germany are having the effect of depressing foreign markets for American manufacturers, according to reports received by Government officials. While there is no sound reason for the existence of this situation, it prevails and evidently is being encouraged by German agents who are said to be giving consumers in world markets the impression that the stocks are huge and will be released in the near future at prices far below those quoted by iron and steel makers in other countries. This propaganda is having its effect and foreign buyers in some countries are withholding orders ordinarily placed with American mills or those of other countries under the belief that by waiting they can get their supplies from the Ruhr district at unusually attractive figures.

The fallacy of such an impression is quickly dissipated when the situation is analyzed and undoubtedly is thoroughly realized by American producers, though this does not overcome the effect on foreign markets.

It is clear that the stocks of iron and steel in the Ruhr district have been purposely overestimated by German exporting interests. The United States Government does not possess actual figures showing the quantities of accumulations, but from calculations based on as reliable reports as have been obtainable, the total is not believed to exceed 700,000 or 800,000 tons. Officials say, however, if the aggregate runs as high as 1,000,000 tons, this is not an important figure from a point of production, consumption and world market requirements when there is taken into consideration the military regulations hampering the German owners of this material.

Abnormal Conditions

Being in the occupied territory the stocks and mills are entirely under the control of the French and Belgian Governments and the situation is surrounded by numerous abnormal conditions which reduce it to negligible importance as a factor in export markets in competition with American and other mills. Moreover, the material having lain in stock for a long period, is said to have deteriorated greatly and to be no longer of the prime quality desirable for first class export trade. It is also true that the French and Belgian authorities have stated that steel and other stocks in the Ruhr which they have confiscated, or which have not been confiscated, will not be released in wholesale quantities to break world markets, but will be released in small quantities over a prolonged period. Furthermore, it is the purpose of the French Government to use large quantities of the steel in French colonies and in the war-devastated areas of France, so that this tonnage will never be put on the market. Internal conditions of Germany are another factor that discounts the importance of the steel stocks in the export trade, typical of which are the poor transportation facilities.

Superimposed upon the foregoing hampering conditions are the regulations growing out of military occupation of the Ruhr district. The outstanding features of this phase which seriously strike German effort to export the steel stocks are summarized as follows:

First, there is a 10 per cent export tax payable in gold to France and Belgium for the right of shipping to foreign markets.

Secondly, a license tax of 0.3 per cent ad valorem payable in gold to cover the expense of maintenance by the French and Belgian Governments of the licensing system.

Third, the foreign currency levy to give authority for exchange. This tax was imposed on German exporters originally by the German Government in order to get exchange with which to pay reparations. The German exporter is paid a certain percentage in foreign exchange in which the contract for goods is made, the amount varying from nothing to 100 per cent, depending on the proportion of the foreign materials used in the manufacture of the goods by the German maker. In some cases where imported raw materials and domestic labor dominate as the items of cost, the domestic tax is as high as 100 per cent. In instances where the principal items of cost are raw or semi-finished materials, the tax is not so high. The average has been 26 per cent to meet the levy of that amount.

When these taxes were turned over, the manufacturers were reimbursed by the German Government in paper marks at the rate of exchange at the date of payment. Upon occupation of the Ruhr, the French and Belgian Governments continued these regulations except that foreign currency was supposed to be paid to the Inter-allied Rhineland High Commission, so that it could take foreign exchange for payment of reparations. With the German Government ceasing "passive resistance," and the French and Belgian Governments relaxing control to a certain extent, the German Government on Sept. 27 abolished this system, but so far as it affects the occupied territory, the French and Belgian Governments are still keeping the system in effect. It is conceded that they have been liberal in granting exemptions, but they continue to hold a strong club over the German manufacturers, who will be permitted to export only upon the terms approved by the occupying governments.

Plans for Disposing of Stocks

Plans for disposing of iron and steel stocks seized in the Ruhr develop slowly, according to a report received by the Department of Commerce from Commercial Attaché Chester Lloyd Jones, Paris. An interministerial commission of nine has been appointed, consisting of iron and steel producers and consumers. Meanwhile the Belgians have organized a special comptoir for their portion of the material. The way is being cleared for a similar French organization to have a capital of 1,000,000 francs, represented by shares of 500 francs value, one-fourth paid in, which will be divided one-half among the producers and one-half among the consumers. Prices and conditions of sale will be controlled by the Minister of Public Works on the advice of the comptoir, and the money received will be turned into such treasuries as the Minister of Public Works may designate, after subtraction of the necessary expenses of the comptoir, which are at present approximately 6 per cent of the amount of the sales.

No detailed list of materials has been published. Sales, however, are to begin shortly. The division of seized scrap material, 100,000 tons to France and 75,000 tons to Belgium, will be carried out so far as the amounts given to France are concerned, by direct agreement among steel producers.

SOUTH RUSSIAN INDUSTRY

Some Improvement Reported in a Letter from Engineer in Donetz Basin

Interesting information regarding industrial conditions in Russia as well as the announcement of some improvement in the production of iron and steel in that country is contained in a letter dated Sept. 15 received some days ago by Robert E. Baker, of Arthur G. McKee & Co., engineers, Cleveland, from B. Grebennikov, engineering department, Petrovski State Works and Mines, Enakievo, Donetz Government, South Russia. The letter in part is as follows:

"I am very much interested in further developments of the Egler's patent open hearth ports in your country and I would like to know what you expect to do in the way of promoting this invention in Russia. I believe that a trial equipment could be introduced at one of the working steel making furnaces of the Ugostal's combine. Of course, this would touch the subject of patent rights, which it might be advisable to take up in the near future. When in Moscow last year I visited the patent office and tried in a general way to investigate this question and I have been advised there that a new patent law had to be worked out and it was my impression that the new patent legislation will conform largely with foreign practice.

"Considerable attention is being paid at present in the engineering world in this country to the use of powdered coal in connection with steam boilers and metallurgical furnaces. It promises to have a great demand when industry gets under way in Russia. Most of the steam boilers used in the Donetz Basin are those of Lancashire type, of 1000 sq. ft. heating surface, but some are Babcock & Wilcox type, of 3000 to 4000 sq. ft. surface.

"Drawing your attention to this matter I would deem it a great favor if you would send me catalogs of the American firms manufacturing such equipment, together with some standard work treating this subject at length, if there be any such lately published in the United States.

"Grain handling installations are being discussed. There has always been a great need for grain storage bins and elevators in Russia and it will be one of the first things required in the way of bettering the grain export business of this country.

Plans for 1200 Tons of Iron Daily

"Our Petrovski works has been shut down this summer and we have only coal mines working now. The Jusovka and Brianski works at Ekaterenislaw were started instead. At present two blast furnaces are in operation at Jusovka works and it is expected that the new blast furnace with the McKee top and Otis hoist equipment will be blown in before very long to replace one of those working now. At Brianski works one blast furnace is in blast and a second furnace is expected to be ready in a few months, provided the situation with respect to the transportation of ore and coke does not prevent. The Makeevka works is being put in readiness to start one of its blast furnaces. Scarcity of pig iron in the country forces the starting of the blast furnaces. Altogether it is proposed to have six blast furnaces in operation of the average output of 200 tons per furnace. Combined with them, steel making furnaces and rolling mills will be in operation at each plant. Altogether the plans provide for a very small quantity of metal when compared with the former output of this country, but it is a gain compared with the last year when there were only two blast furnaces in blast."

Mr. Grebennikov, in his letter, acknowledged the receipt of two packages of confections sent him by McKee & Co. and mentioned that the first package reached him two months after shipment, but that it was six months before the second package was delivered.

BRITISH FOREIGN TRADE

September Steel Exports Larger Than August—Imports Practically Unchanged

September exports of iron and steel from Great Britain showed an increase over August of about 14,000 gross tons. There was also an increase in August over July of about 15,900 tons. The September exports were 344,358 tons as compared with 330,431 tons in August. The imports in September of 127,893 tons compare with 121,906 tons in August, which was the smallest this year. Comparative data for both exports and imports, scrap being included, were as follows:

British Steel Exports and Imports, Gross Tons

	Exports	Imports
Aver. per month, first quarter, 1923	358,208	128,032
April, 1923	398,507	133,929
May, 1923	435,630	114,132
June, 1923	373,277	130,066
Aver. per month, second quarter, 1923	402,471	126,042
July, 1923	314,522	128,486
August, 1923	330,431	121,906
September, 1923	344,358	127,893
Average per month, 1922	295,980	82,215
Average per month, 1921	144,885	152,734
Average per month, 1920	274,881	128,685
Average per month, 1919	188,519	50,801
Average per month, 1913	420,757	195,264

More detailed data of the exports are as follows:

Principal British Exports, Gross Tons per Month

			September	
	1913	1922	1922	1923
Pig iron } Ferroalloys }	93,700	66,159	69,950 / 17,751	45,015 / 14,282
Steel rails	42,200	21,300	16,375	33,635
Steel plates	11,200	6,700	6,402	15,039
Galvanized sheets	63,500	43,600	35,041	44,056
Steel bars, rods, etc.	20,900	19,100	18,122	23,181
Tin plates	41,200	37,400	35,258	38,725
Black plates and sheets	11,700	18,700	16,640	23,276

Exports of scrap iron and steel in September were 10,373 tons, or 10,019 tons per month for the first nine months of this year, as compared with 12,880 tons per month in 1922. In 1913 there were 9600 tons per month.

Data as to importations of importance are as follows in tons per month:

	1913	1922	Jan.-Sept., 1923
Iron ore	620,000	289,400	504,250
Manganese ore	50,100	28,109	41,992
Pig iron and ferroalloys	18,000	12,800	10,370

Japanese Demand for Woodworking Machines

Clifford P. Egan, president J. A. Fay & Egan Co., Cincinnati, manufacturer of woodworking machinery, on his return to Cincinnati after a trip to the company's Pacific Coast sales offices, expressed optimism as to the outlook for continued prosperity in woodworking machinery. Mr. Egan says: "With the Japanese Government removing the duty on piece lumber, many of the tidewater mills have withdrawn from the domestic market while the Japanese market looks so big."

Inquiries are being received by the J. A. Fay & Egan Co. in good volume and indications point to a moderate revival in building activities, as the sash and door manufacturers have a good volume of business on their books and are looking to increasing production by the use of more modern equipment.

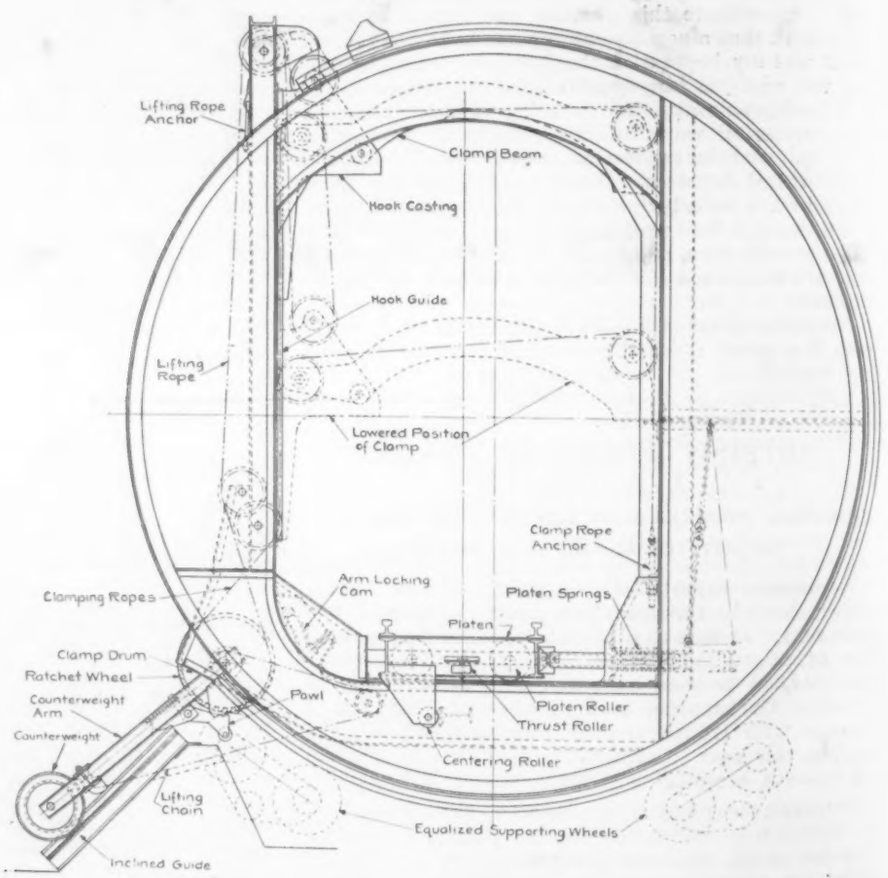
With a view to engaging in exporting springs for use in railroad equipment, the American Spring Manufacturers' Association, Farmers Bank Building, Pittsburgh, has filed papers under the Webb-Pomerene act with the Federal Trade Commission. The officers and members of the association are W. H. Rea, secretary; Richard Sanderson and Frank Metzger, for the Standard Steel Works Co., Philadelphia; Frank J. Foley and W. E. J. Gillahan, for the Railway Steel Spring Co., New York, and R. H. Ripley and A. H. Peycke, for the American Steel Foundries, Chicago.

The American Railway Association will hold its 1924 meetings and exhibits of machinery at Atlantic City, N. J., June 11 to 18.

Semi-Automatic Railroad Car Dumper

All Motions Except Revolving Are Automatic—Car Held by Clamps Rigidly Against Blocking—One Motor Only

TO meet a demand for a machine of low capacity, of simple construction, and adaptable to plants where the installation cost is an important factor, but where high efficiency and low operating cost are required, the Wellman-Seaver-Morgan Co., Cleveland, has brought out a new revolving car dumper which will handle all sizes and capacities of open top railroad cars. A clamping arrangement is provided which automatically adjusts the machine to the size of the car. In operation a car is placed in the machine, a control lever is turned and the car is inverted, discharging the contents into the bin beneath. After dumping, the car is returned to its original position by turning the control lever in the opposite direction. With the exception of the revolving operation all the functions are automatic.



Section Across Car Dumper, Showing Relationships of the Platen, Clamps, and Equalized Supporting Wheels Upon Which the Whole Apparatus Rotates. The circular end sections have toothed segments for obtaining rotation from the operation of spur gears actuated by the motor, which is positioned midway between the ends

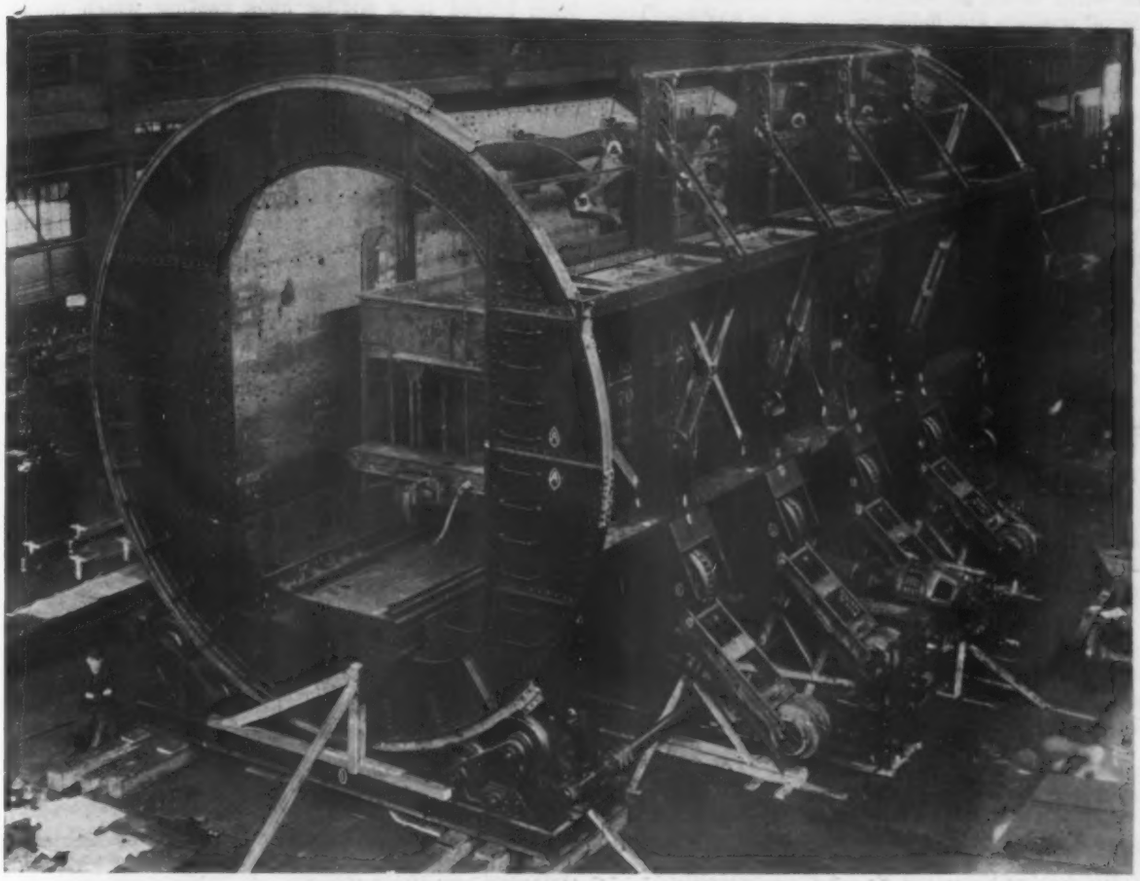
The machine has a car-holding cradle supported at either end by equalized rollers, upon which it revolves. The rollers are carried in structural bases bolted to the foundation. The end frames of the cradle are in the form of circular girders which are partially surrounded by gear segments. Rotation is accomplished by two pinions meshing with these segments and driven by a motor supported on the main foundation at the rear of the cradle. The cradle and frames are connected together by a plate girder construction which forms a box open at the top, in which the car is held while dumping. The track passing through the cradle is carried on a platen which has a lateral movement.

How the Machine Operates

Multiple car clamps hold the car in the cradle while dumping. These clamps are normally held in their upper position when the cradle is ready to receive a load or to discharge an empty car. As the cradle with the loaded car starts to revolve, the platen moves laterally toward the dumping side, until the side of the car engages blocking provided for that purpose, and then the clamps descend until they rest on the top of the car. Continued revolution of the cradle automatically engages the clamp counterweights, which hold the car securely in place while dumping and release automatically as the cradle returns to its initial position. Each set of clamps is independently operated, so that the load on the top flange of the car is evenly distributed to all points of contact of the clamps. A special feature is a pivoted counterweight arrangement which produces a maximum holding power with a minimum of counterweight. The movable platen and the car clamping device follow closely the design of similar parts on other types of this company's car dumpers.

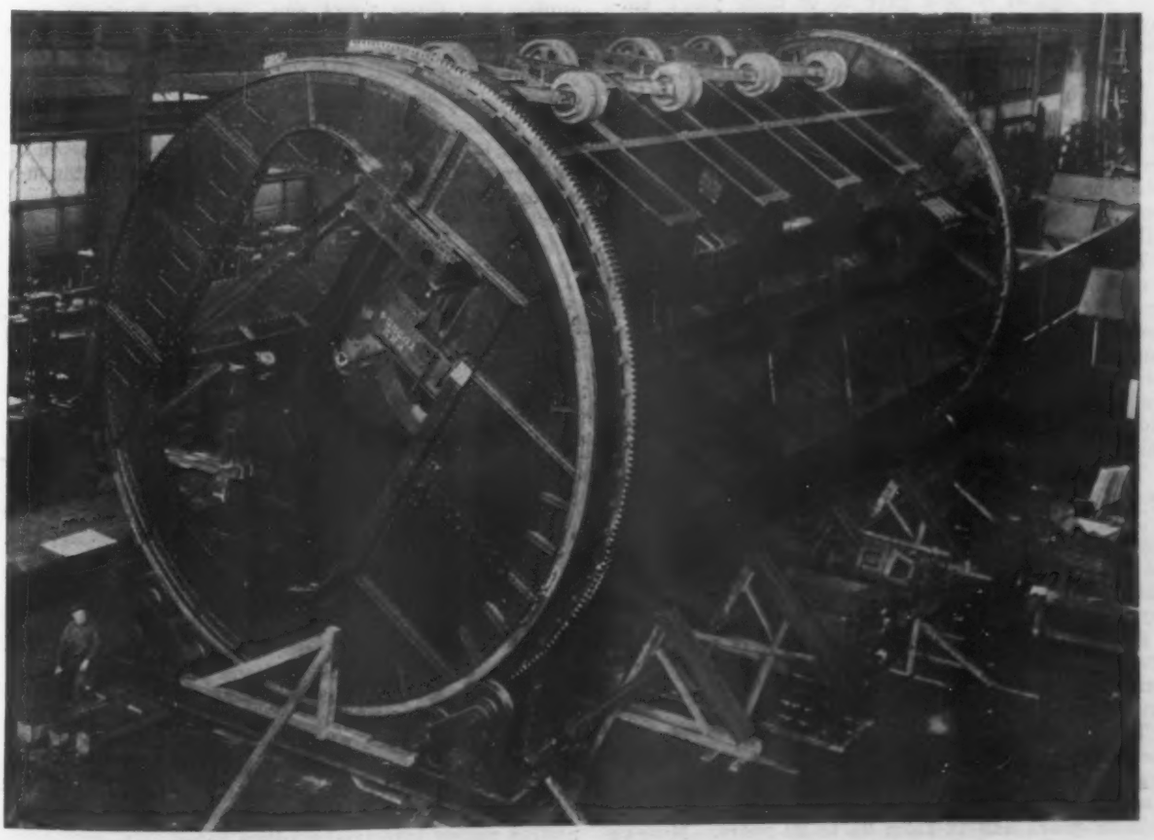
Operation is from a cab at one end of the cradle, elevated to a point where the operator always has a clear view of his work. Only one motor is required to operate the machine and there are no electrical connections on the cradle and no complicated interlocks. The speed of operation depends on the size of the motor used. With a 50-hp. motor—standard equipment—it is stated that the machine has a capacity of 20 cars per hr. This may be increased by the use of a larger motor.

Each main pinion in the revolving mechanism is driven by a single spur gear reduction, connected by a longitudinal shaft which, in turn, is driven by a worm reduction unit direct connected to the driving motor by a flexible coupling. The motor has a magnetic



The Dumper in Its Upright Position, (Above) Showing Clamp Counterweights and Drive, All the Operating Mechanism Being Located on the Side Opposite the Dumping Side

(Below) This Shows the Dumper Inverted and Clamps Set. Each clamp is operated by its own drum and counterweight arm, forming a clamping unit.



brake, which is set as soon as the controller is turned to the off position and holds the cradle in any position. There is also an emergency brake controlled by a lever in the operator's cab and electric limit switches to prevent overtravel of the cradle. Steel shafting is used throughout in the revolving mechanism and all bearings are of cast steel with bronze bushings. The gears and pinions are of cast steel except the worm reduction gear, which is bronze. The mechanism is arranged to revolve the cradle to an angle of 160 deg., the side of the car in dumping position being only 20 deg. from the vertical.

During the dumping operation the side of the car must be supported; for this purpose the movable platen is used. This consists of a structural steel platform carrying the car rails and supported on rollers in such a manner that it is capable of lateral movement, which varies according to the width of the car. In the initial position of the cradle, adjustable centering rollers hold the platen in alinement with the car track. The platen is carried by a series of flat tread rollers supported on pins and so arranged as to distribute the load properly into the cradle structure. The blocking against which the side of the car is held while dumping is of a sectional block type made up in units which can be replaced when worn. The side of the car is brought so close to the side of the cradle that only very small material can fall between.

Action of the Clamps

Each of the pivoted counterweight clamps is operated by an independent counterweight attached to an arm pivoted to the cradle. Each clamp consists of a steel beam hinged to a sliding hook casting which moves vertically in guides attached to the cradle frame opposite the dumping side. The beam is raised or lowered and held by ropes wound on an operating drum, which revolves on the pivot of the counterweight arm. The ropes lead to opposite sides of the drum so that, as the clamp lowers, the lifting rope plays off the drum the same amount that the clamping rope winds on. The lifting rope leads from the drum over a sheave at the rear of the cradle, around a sheave in the hook casting and is anchored to the top of the guide crane. The clamping ropes lead direct from the drum to the clamp, passing around sheaves in each end of the beam, and are anchored at the bottom of the dumping side of the cradle. A flat link chain attached to a spiral cam on the hub of the drum is used to revolve the drum in the proper direction to raise the clamp. In designing the clamping mechanism it was the aim to eliminate the human element to the greatest extent possible, the only function requiring manual control being the rotation of the cradle.

Standard machines can be supplied in lengths of 30, 40, 50 and 60 ft. and for handling cars up to 120 tons capacity. This dumper, it is pointed out, can be used economically for handling coal at coke plants where the fuel is discharged into hoppers beneath the car tracks. It is stated that the dumper can be installed in such a position that it will discharge into bins that have already been built for use with hopper bottom cars, with only slight change in the bin construction.

Comprehensive Pension Plan Adopted by Wickwire-Spencer Steel Corporation

The directors of the Wickwire-Spencer Steel Corporation, through their executive committee, have authorized a comprehensive pension plan, which will be put into effect at once.

The plan provides for definite retirement on pension for all male employees who reach the age of 70 and have served the corporation or its predecessors for 25 years or more, and for female employees who reach the age of 60 and have 25 or more years' employment to their credit. Retirement at request with pension is possible to men who reach the age of 65 and women 55 years of age, if they have been 25 years or longer in the service.

Provision is made also for retirement with pension for those who have been 15 years or longer in the service and who become permanently totally incapacitated through no fault of their own or their employment, but as a result of sickness or injuries received while not on duty.

The amount of individual pensions will be determined by multiplying 1 per cent of the average monthly earnings for the last 10 years of service by the number of years of service, except that no pension shall be more than $100 per month nor less than $12 per month. For example, an employee who has been in the service 25 years and whose average monthly pay has amounted to $100 will receive a pension of 25 x 1 per cent x $100 or $25 per month or $300 a year.

The management of the plan is in the hands of a pension board made up of Frank A. Drury, Winthrop G. Hall and C. C. McDonald, the first two being treasurer and clerk of the corporation, respectively, and the latter, assistant to the vice-president with headquarters at Buffalo. Approximately 5000 employees including salesmen and officials will be eligible to participate. Thirty-seven of these have records of service which will entitle them to immediate retirement with pension, seven more reaching that status during 1924.

The corporation's Clinton works heads the list of veterans with 40 employees having service records ranging from 51 to 25 years. Of these, one has been in service 51 years, five from 41 to 48 years, 22 from 30 to 38 years and 12 from 25 to 29 years. Morgan works has one employee with 42 years of service to his credit and another with 41. Five others have been in the service more than a quarter of a century. National has one man who has worked through 40 years, while eight others, including six women, have been employed from 29 to 35 years. Wright works has one 40-year man, one 35, and 14 between 25 and 32. The dean at Goddard works has 46 years' service to his credit, and six others have been employed for periods varying from 25 to 32 years. Palmer works has five men whose service exceeds 25 years.

Spencer works, which celebrated its one-hundredth anniversary three years ago, has two workers with records of more than a half century of service. One of them, Frank Baker, Sr., has been on the payroll for 59 years, and another, Thomas Lanagan, has been on for 55 years. Ten others have been employed from 40 to 45 years, and 24 from 25 to 39 years.

The Wickwire works at Buffalo were started in 1907, so that employments of more than a quarter of a century will not occur there for a few years yet.

Massachusetts Statistics of Labor

The annual report for the year ended Nov. 30, 1922, has been issued by the Massachusetts Department of Labor and Industries. It embodies a large amount of data, mostly statistical, covering employment, wages, hours of labor, etc., and a great variety of occupations —both public service and manufacturing. A special report under the title "Population and Resources of Cape Cod" is devoted to a section which is generally regarded as a summer resort, but which is nevertheless of large commercial importance because of its fisheries and cranberry bogs.

"Eye Hazards in Industrial Occupations," the title of publication No. 12 of the National Committee for the Prevention of Blindness, first issued in 1917, has been revised and enlarged and will be ready for distribution about Jan. 1, according to Lewis H. Carris, managing director of the committee, 130 East Twenty-second Street, New York. The volume will be distributed to heads of departments of industrial plants, to engineering colleges and technical schools, and all others interested in accident prevention and health promotion among industrial workers.

PERSONNEL PROBLEMS DISCUSSED

Management Committees Report on Selecting Employees, Wage Plans and Other Activities

One of the most important phases of personnel work and one which must be given preferential attention if progress is to be made in the next decade is scientific selection of employees, according to the report of the committee on employment plans presented by Earl B. Morgan, Curtis Publishing Co., Philadelphia, at the convention of the American Management Association, held at the Hotel Astor, New York, Oct. 29 to 31.

This phase of employment practice was cited as being in a less developed stage than any other, and although the subject of much experimenting there has been little in the way of definite results. "There is no hesitancy in prophesying," said Mr. Morgan, "that ten years from now we are going to look back on the methods of today and wonder how we ever met the problem."

Job description and man specifications were taken up in a report read by F. W. Pierce, manager personnel department, Goodyear Tire & Rubber Co., job analysis as employed by the Goodyear company with marked success for over ten years being outlined. The work was said to have been to a large degree in the nature of detail time and motion studies which were used as the basis of wage determination. About four years ago by means of job analysis a plan was worked out for determining the proper relation between jobs, thereby fixing the base rate.

"Our ability to show an employee an analysis of the operation on which he is engaged," said Mr. Pierce, "is a very satisfactory method for discussing questions relating to the amount of time allowed to perform the operation, as well as the base rate on which the present price is calculated. By having this organized method of discussion we are able to convince many a disgruntled employee and thus maintain the morale of the workers.

"By an analysis of the job and a detailed time study it is possible to discover many lost motions which can be brought to the attention of the foreman or the operator, resulting in reduced labor cost of the operation. By means of these studies it is also possible to determine with certainty whether the right type of man is being used on any particular operation."

In a report of the committee on remuneration, of which D. W. K. Peacock, personnel director White Motor Co., Cleveland, is chairman, it was stated that a survey of factories employing 250,000 workers indicates that straight piecework is used in three-fourths of the plants and some form of bonus in one-third.

Two forms of wage payment, "the standard hour" and the group piece rate, or bonus, were said to be growing in favor among employers because they overcome some of the difficulties inherent in the piece rate method. The "standard hour" method makes it possible to change the general level of wages when necessary without changing the standard rates on all jobs. It also is more flexible in compensating individual differences between workmen. The group piece rate or bonus eliminates much of the expense of timekeeping, counting, and inspection, and increases cooperation between workmen. Established methods of increasing the interest of "indirect" workers in their jobs were outlined.

Economics for Employees

That a large number of companies and institutions are keenly alive to the need of instruction of employees in economics, and many of them are endeavoring to provide such instruction, was emphasized in a report of the committee on economics for employees, presented by A. J. Beatty, director of education, American Rolling Mill Co., Middletown, Ohio. In this direction, it was pointed out, the chief need is for a clear and simple statement of and discussion of the fundamental principles of economics, in language stripped of technical terms, and elaborated with illustrative matter drawn from everyday business and industrial life, preferably from the immediate environment of the particular study group. Economic facts rather than economic theory were held to be of greater interest to the majority of workers. Of the methods of instruction used, the lecture, house organ, movie reel, and bulletin board, the small discussion group in charge of a competent group leader was said to be the most successful.

That the American workman is generally less efficient in good times when his labor is needed most than in bad times when it is needed least was emphasized in an address on "Labor Efficiency in Good and Bad Times," by Dr. N. I. Stone, Hickey-Freeman Co., Rochester. This was ascribed to a sense of fear of losing his job at a time when there are not enough jobs to go around, and on the other hand to a feeling of independence in prosperous times when there are more jobs than people to fill them.

"The idea that labor can only be made to work by spur of the fear of discharge," said Dr. Stone, "is beginning to be superseded by more modern methods of personnel management. Plant managers are discovering that man responds more readily to the positive incentive of gain than to the negative one of fear. The worker's interest in his job and therefore his productive efficiency are stimulated far more by a sense of economic security than by the amount in his pay envelope at the end of the week.

"Continuity of employment is a possibility for a much larger number of companies than is ordinarily imagined," said Dr. Stone. "Progressive employers, many of whom gave little thought to the business cycle before the depression of 1920, are already working on that basis, learning to plan ahead and to control the volume of their business. The next step is to plan production in a manner to provide greatest continuity of operation possible." Continuity of production was thought to be the greatest problem challenging the ingenuity of the leaders of American industry.

The tremendous cost of labor turnover, estimated at $900,000,000 a year in the United States, was discussed by J. D. Hackett, industrial engineer, New York, in connection with a report of the committee of labor turnover.

C. W. Garrett, assistant to the vice-president in charge of personnel of the Pennsylvania Railroad system, read a paper prepared by Elisha Lee, vice-president of the Pennsylvania system, on "Supervision and Discipline." Mr. Lee's paper described the employee-representation system in the railroad management, and told of its success.

COMING MEETINGS

November

Ohio State Foundrymen's Association. Nov. 15 and 16. Annual Convention, Toledo Yacht Club, Toledo. Arthur J. Tuscany, Century Building, Cleveland, secretary.

Electric Power Club. Nov. 19, 20, 21 and 22. Fall meeting at French Lick Springs Hotel, French Lick, Ind. S. N. Clarkson, Rockefeller Building, Cleveland, secretary.

National Founders Association. Nov. 21 and 22. Annual meeting, Hotel Astor, New York. J. M. Taylor, 29 South La Salle Street, Chicago, secretary.

December

American Society of Mechanical Engineers. Dec. 3, 4, 5 and 6. Annual meeting in New York. Calvin W. Rice, 29 West Thirty-ninth Street, New York, secretary.

National Exposition of Power and Mechanical Engineering. Dec. 3 to 8, inclusive. Second annual exposition, Grand Central Palace, New York. Headquarters, Grand Central Palace, New York.

American Institute of Chemical Engineers. Dec. 5, 6, 7 and 8. Winter meeting in Washington, D. C. J. C. Olsen, Polytechnic Institute, Brooklyn, N. Y., secretary.

OCTOBER STEEL OUTPUT

Production Rate Only 1241 Tons a Day Below That of September

The production of steel ingots in the United States in October declined less than 1 per cent from that in September and compares with a falling off in the previous month of about 2.7 per cent. The statistics of the American Iron and Steel Institute indicate a daily rate of ingot production last month of 131,406 tons as against a daily average of 132,647 tons in September, the decrease being only 1241 tons a day. In September the falling off from August was 3567 tons, according to revised figures.

The October production of companies which made 95.35 per cent of the country's total in 1922 was 3,382,986 gross tons, which, assuming that the 4.65 per cent not reporting produced the same percentage of the total as in 1922, would mean an October output of 3,547,966 tons.

The table below gives the production by months for 1923 of the different kinds of steel, together with estimated daily rate for all companies. Following it is a table showing the production by months in 1922:

Monthly Production of Steel Ingots, January, 1923, to October, 1923, Reported for 1923 by Companies Which Made 95.35 Per Cent of the Steel Ingot Production in 1922

Months 1923	Open-hearth	Bessemer	All Other	Calculated Monthly Production All Companies	Approximate Daily Production All Companies, Gross Tons
Jan. ...	2,906,892	728,270	9,467	3,822,369	141,569
Feb. ...	2,613,564	669,903	10,797	3,454,918	143,955
March ..	3,046,309	799,525	12,841	4,046,854	149,883
April ..	2,974,579	772,485	13,933	3,944,412	157,776
May ...	3,136,558	847,418	16,719	4,195,800	155,400
June ...	2,821,239	737,845	15,483	3,748,890	144,188
July ...	2,658,449	680,884	11,496	3,514,241	140,570
Aug. ...	2,796,370	701,059	9,326	3,677,771	136,214
Sept. ...	2,539,653*	613,709	8,602	3,316,166*	132,647*
Oct. ...	2,724,371	649,452	9,163	3,547,966	131,406
10 mo.	28,217,984	7,200,550	117,827	37,269,387	143,344

*Revised.

Monthly Production of Steel Ingots, January, 1922, to December, 1922, Reported by Companies Which Made 84.15 Per Cent of the Steel Ingot Production in 1922

Months 1922	Open-hearth	Bessemer	All Other	Calculated Monthly Production All Companies	Approximate Daily Production All Companies, Gross Tons
Jan. ...	1,260,809	331,851	822	1,891,857	72,764
Feb. ...	1,395,835	348,571	616	2,071,772	86,324
March ..	1,918,570	451,386	795	2,814,667	104,247
April ..	1,997,465	445,939	1,109	2,902,240	116,090
May ...	2,214,774	494,893	1,474	3,218,794	119,215
June ...	2,143,708	487,851	2,918	3,127,775	120,299
July ...	2,020,572	464,047	2,485	2,952,806	118,112
Aug. ...	1,807,310	404,379	2,893	2,629,256	97,380
Sept. ...	1,911,147	460,127	2,505	2,818,261	108,395
Oct.	2,352,207	518,010	2,198	3,410,265	131,164
Nov. ...	2,360,903	525,945	2,449	3,430,309	131,935
Dec. ...	2,241,104	536,214	2,572	3,300,416	132,017
Total.	23,624,404	5,469,213	22,836	34,568,418	111,511

Tremendous Building Shortage Estimated

A survey of the United States by the *Building Age* of New York indicates a probable building shortage approaching $10,000,000,000 in construction value. This survey was conducted by means of a questionnaire directed to 1500 Chambers of Commerce, and the final figures are based on replies received from 441. Replies came from 375 cities and towns under 25,000 population and 66 cities of more than 25,000 population, the total of needed construction in these cities and towns being $965,547,000. Using this as a factor, it is estimated that the total of building requirements for the country, exclusive of farms, is $4,869,700,000. As no figures were obtained for buildnigs on farms nor for such work as public utilities, churches, memorials, military and naval buildings, etc., the comment of the *Building Age* is that "it will be seen that the present building shortage will total well toward the $10,000,000,000 mark."

Of the estimated building shortage, private dwellings make by far the largest item both as to numbers and value. It is estimated that there is a need for 519,110 dwellings, 14,069 apartment buildings, 2739 schools, 1319 hospitals, 1305 theaters, 2944 hotels, 11,012 store buildings, 1000 office buildings, 2791 factories, in cities and towns under 25,000 population, while cities of more than 25,000 are said to require a total of 150,523 dwellings, 15,376 apartment buildings, 343 schools, 92 hospitals, 254 theaters, 174 hotels, 1310 store buildings, 627 office buildings, 2102 factories, while in cities and towns of both classes there is an additional need for upward of 12,000 buildings of miscellaneous types not mentioned in these divisions.

Sale of Naval Vessels

Bids will be opened at the Navy Department, Washington, at 11 a. m., Nov. 30, for the sale of the last six of the 21 capital ships to be sold under the provisions of the treaty for the limitation of naval armaments. These include the Delaware, 20,000 tons, at the Boston navy yard; the Michigan, 16,000 tons, at the Philadelphia navy yard; the Minnesota and Kansas, 16,000 tons each, at the Philadelphia yard; the Vermont, 16,000 tons, at the Mare Island navy yard, and the Nebraska, 14,948 tons, also at Mare Island.

Certain engineering and ordnance material on these vessels is to be landed at the navy yard by the purchaser and left there. Otherwise, the ships are to be broken into scrap for eventual remelting, with such salvage of small parts, valves, piping, etc., and pieces of machinery that may be worth saving in this way.

It is of interest to note that the Michigan was the first American all-big-gun battleship or dreadnought built and that, in fact, she was the first ship of this type designed anywhere in the world. Except for the Michigan and Delaware, the ships in this sale group are of the pre-dreadnought era.

Navy Accepts Bids on Uncompleted Vessels to Be Scrapped

WASHINGTON, Nov. 13.—The Navy Department has accepted the following bids for uncompleted vessels on the ways at private shipyards, to be scrapped in accordance with the terms of the treaty limiting naval armament, proposals for which were opened in the department Nov. 8:

The Steel Scrap Co., Philadelphia, for the Constellation, as is, where is, $45,666.66 on a deferred payment basis; for the Ranger, as is, where is, $10,666.66 on a deferred payment basis; for the Iowa, as is, where is, $55,666.66 on a deferred payment basis; for the Massachusetts, $12.06 per gross ton, shipping size, on a deferred payment basis.

The Constellation, Ranger and Iowa are at the Newport News Shipbuilding & Drydock Co., at Newport News, Va. These are to be scrapped by the purchasers. The Massachusetts is at the Bethlehem Shipbuilding Corporation's plant at Fore River, Mass., and the Government is to arrange for cutting this vessel to shipping sizes.

Power Show to Include Material Handling Equipment

Material handling equipment will be included in the National Exposition of Power and Mechanical Engineering to be held in the Grand Central Palace, New York, from Dec. 3 to 8, inclusive. Conveyors, fireless steam locomotives, industrial trucks, elevators, hoists and large scales are on the list. The managers of the exposition are Fred W. Payne and Charles F. Roth, with offices in the Grand Central Palace. A list of 250 exhibitors has been issued.

The *Far Eastern Review*, a monthly engineering paper published at Shanghai, China, by Americans, has opened a branch office at 50 Church Street, New York, under the management of J. Hamilton of Shanghai. The Tokio office was destroyed in the recent earthquake.

BUILDING RESISTANCE IN TOKIO

American Steel Frame Designs Structurally Intact —Much Surface Destruction

Reports made by the engineers of the George A. Fuller Co., New York, which had erected in Tokio three large office buildings of American type, show that the earthquake damage to these buildings was mainly superficial. All three were heavily braced, from designs prepared by H. V. Spurr, of Purdy & Henderson, engineers, New York, as shown on page 685 of THE IRON AGE for Sept. 13. Extracts from the reports follow:

From Preliminary and Superficial Examination (Entirely from the Outside)

Marunouchi Building

Many cracks in brick and concrete filling between the steel columns on the second and third floors. Outside tiling had been badly buckled in many places and falling off, but this tiling was simply ornamental and added nothing to the strength of building. Steel frame work appeared to be absolutely intact without any shifting of position. No window glass was broken.

N. Y. K. Building

Steel frame absolutely intact with no shift, considerable damage to brick walls and terra cotta between the steel columns on the second and third floors, most of which occurred on the corners; also some of the exterior terra cotta was badly cracked on upper floors. The interior walls on first floor showed no cracks nor was any window glass broken.

Japan Oil Building

Steel frame intact with no shifting, some damage on second and third floors to the brick and terra cotta between steel columns, but considerably less than on the other buildings; also considerable of the terra cotta showed cracks on the upper floors and a few of the granite base blocks were cracked. No window glass was broken, but from the outside view there were indications that a portion of the hollow tile partition walls on first floors had fallen down.

Seiuyukai (under construction)

Small damage, as the walls were not cracked, but some damage from the fire caused by scaffolding burning; no indication, however, of any interior damage to partitions or walls, and work on this building can be resumed at once.

From Engineer's Thorough Examination

Structural Steel

The steel frame in every case [in all three completed buildings] seems to have been of sufficient strength to withstand the dead loads and the sudden application of any superimposed loads due to vibrations caused by the earthquake and also seems to have shown a sufficiently high elastic limit to have returned to its original position in every case. That there was undoubtedly a marked momentary deflection laterally in the columns is evidenced by the shattering of a large percentage of the masonry piers surrounding or inclosing the exterior wall columns, and of the plastered partitions between the steel columns of the interior (and the distortion or destruction of the steel cross bracings which were added to the Marunouchi Building after the earthquake of 1922.) While the momentary and violent deflection of the columns laterally, particularly in the second and third stories, was of sufficient strength to shatter the inclosing or contiguous masonry, the agitation was not sufficient to distort the structural steel permanently in any case.

Reinforced Concrete

Except where the principal bays or sections of the parts of each building were joined together, such as the front of the side wings, there was no evidence of any destruction or distortion of the reinforced concrete floor slabs. At the joints between the front and side wings there were some minor cracks in the floor construction showing through the corridor floor surfacing, and indicating that the several sections of the building vibrated independently from each other, the cracks being undoubtedly due to a very severe shearing stress at these points.

In the Marunouchi Building there does not appear to be any marked or serious damage to the reinforced concrete floor slabs or beam coverings. Where reinforced concrete walls were used on the interior there was a minimum amount of damage, except at certain points on stairway walls near the west side of the building. This damage was probably due to the lack of continuity of these walls in a straight line.

Recommendations

as to the design of buildings to be erected in locations subject to earthquake shocks.

Structural Steel

Columns should be placed in straight lines in each direction so that at every panel there will be a maximum number of points of resistance. The sections of columns should be as wide as possible in each direction and should be connected at each floor by girders as deep as the requirements for head room will permit. Both columns and girders should be latticed if the computation of stresses does not require solid web plates. If solid webs are required then the webs should be punched at frequent intervals to permit of the proper application of reinforcing steel. Between the girders at each floor will be the necessary steel beams for carrying the reinforced concrete floor slabs.

In cases where head room or clear interior spaces are absolutely necessary then resort must be had to knee braces. It is recommended, however, that such rooms as absolutely require great height or clear interior be placed on the top story, or as near thereto as possible. Rivets for connection of girders to columns should be in shear wherever possible. Rivets in tension should be studiously avoided.

ACTIVITY IN DETROIT

Automobile Companies Preparing to Increase Production—Pig Iron Outlook More Favorable for Sellers

DETROIT, Nov. 12.—With a higher rate of production of automobiles announced by the leading manufacturers for the first quarter of 1924, with the stove furnace and radiation manufacturers operating on approximately a 100 per cent basis, melters of iron in the Michigan district are showing little interest in covering for their needs beyond Jan. 1. The situation is analogous to this pre-inventory period a year ago when a heavy buying movement occurred immediately following the Thanksgiving holiday.

Probably 90 per cent of the iron to be melted during the first three months of the new year is to be bought and indications are that a buying movement of considerable proportions may be started soon.

The general softness of the pig iron market has given the consumers a feeling of safety on future business, but at the same time it has placed them on a highly competitive basis. The automotive industry especially, which consumes approximately 60 per cent of the pig iron melted in the Michigan district, is passing through the most intensive competitive stage in its history. Producers of parts are of necessity cutting all the corners to lower their production costs as they are being forced to carry a portion of any reduction in the price of the finished car.

Labor in the Detroit district is adequate but not plentiful. Employment decreased slightly during the week ending Nov. 6, the labor barometer of the Employers' Association showing a total working force of 214,017 for the 79 representative firms reporting. This is a falling off of 538 from last week's figures. A year ago the same concerns, whose employees compose two-thirds of the city's working population, reported 175,733.

The city council of Johnstown, Pa., has approved contracts for the erection of Johnstown's two proposed new bridges, the Napoleon Street and Coopersdale spans. The Independent Bridge Co., Pittsburgh, was awarded the Coopersdale bridge contract for $179,400, and the Napoleon Street bridge contract was given to the Farris Engineering Co., Pittsburgh, for $152,718.

BOSTON HEARING CONTINUES

Competition and Deliveries Figure in Investigation of Bethlehem Merger

Evidence introduced during the second week of the Federal Trade Commission's hearing at Boston on the Bethlehem Steel Corporation's acquisition of the Cambria, Midvale and Lackawanna steel properties was along the same lines as introduced the first week.

The hearing was enlivened at one session lasting until after 6 p. m. by a remark made by Robert Sanderson, general manager E. P. Sanderson Co., Cambridge, Mass., steel jobber. The witness asked if a large group from "the Bethlehem sales force" was there to intimidate him in his answers. Considerable wrangling of attorneys followed.

The matter of price, in so far as it related to the merger of the Bethlehem, Lackawanna, Midvale and Cambria companies, was not perhaps gone into as thoroughly by attorneys for the Government the second week as in the first. The tendency was to dwell more on the status of competition among steel producers since and before the combination. Along these lines Clinton D. Baldwin, purchasing agent Bangor & Aroostook Railroad, declared he formerly purchased rails and accessories from Lackawanna and Bethlehem, that competition thereby was established, and that since the merger in question competition in his opinion did not exist.

Testimony submitted on the question of deliveries since the acquisition of the companies involved was conflicting, being about equally divided between favorable and unfavorable. Dealing with the matter of cost, one witness said the steel market is soft at present, but that he had not noticed "any material drop in prices." Throughout the hearing, when reference was made to price and steel market conditions, Attorney Bane frequently asked witnesses if they read THE IRON AGE for the purpose of keeping in touch with steel market conditions. Witnesses said that THE IRON AGE was an authority on matters pertaining to steel and the industry.

Among the witnesses called during the second week of the hearing were: William P. Shine, treasurer Boston Structural Steel Co., Cambridge, Mass.; A Sherman Miller, Jr., treasurer and general manager Eastern Bridge and Structural Co., Worcester, Mass.; Albert H. Inman, Pratt & Inman, Worcester, steel jobbers; E. T. Peverly, secretary Boston Bridge Works; Herbert L. Austin, New England representative Central Iron & Steel Co. and formerly associated with the Boston office Lackawanna Steel Co.; George E. Hamblin, purchasing agent Whitin Machine Works, Whitinsville, Mass., cotton machinery, and G. Morris Congdon, president Congdon & Carpenter Co., Providence, R. I., iron and steel jobbers. Arthur C. Harvey, president and treasurer A. C. Harvey Co., Allston, Boston, iron and steel jobber, was the first witness called during the third week of the hearing.

DIRTY STEEL

Effect of Non-Metallic Inclusions on Endurance Tests—Nickel-Silicon Steels

The endurance work of the Bureau of Mines field station at Ithaca, N. Y., has given results which in general fit in very well with the recent work of the engineering experiment station of the University of Illinois, and which indicate that the conclusions of the Illinois investigation may be extended to apply to a large range of alloy steels.

But, beside corroborating and extending the Illinois results, the work of the bureau has brought out a point which has not been covered completely by other investigators in this country or abroad, although it has been considered to some extent by most workers in this field. This point is the evil effect on endurance of non-metallic inclusions. Dirty steel gives far less uniform results on endurance tests than cleaner steel, and dirty steel is certainly unreliable and unsafe where repeated vibration must be endured.

These inclusions, or other similar inhomogeneities in the metal, are probably the cause of many failures in service. From the relationship worked out by the Illinois investigators and others, and corroborated by the Bureau of Mines tests, the endurance properties of any really clean steel may be quite safely predicted. But when the steel is not clean, it may either give the same results as a clean steel, or far poorer results, depending on whether the most severely stressed spot in a piece made from the dirty steel happens to be locally clean or locally dirty.

The problem of the exact effect of different inclusions or inhomogeneities in steel and other alloys, and the larger problem of how to produce clean steel and alloys, are of vital importance, and involve many factors in the preparation of metallic products, ranging from the methods of elimination of impurities from the ores, down through the smelting of the metals and the melting of the alloys. Much scientific data needed for a proper understanding of the problem are lacking.

To obtain further information on the effect of inclusions, comparisons are being made of endurance tests on specimens cut both with and across the direction of rolling, since the latter, or transverse specimens, usually show the bad effect of inclusions and inhomogeneities most markedly.

As soon as the endurance tests on the series of molybdenum, cerium and comparison steels are completed, tests will be made on a series of nickel-silicon steels previously made by the Bureau of Mines for the Navy, on which tests made by the Navy on properties other than endurance are available. The Navy has supplied specimens cut both longitudinally and transversely, and the bureau has prepared all these specimens for testing. This work should throw some light on the problem of inclusions. But work with inhomogeneities such as inclusions in steel is difficult because of the irregularity of distribution of the inclusions.

In order to study the effect of different kinds of inhomogeneities in different sorts of alloys, work on certain non-ferrous alloys has been begun.

Prior to the fiscal year of 1922-1923 a series of 50 molybdenum, cerium and other alloy steels was prepared for comparative purposes, in cooperation with the Vanadium Corporation of America, and the Welsbach Co., and the necessary tests, other than endurance tests, were made.

Endurance tests are time-consuming, and, save for a short period when the machines were out of commission due to a fire which damaged the laboratory of Sibley College, Cornell University, in which the endurance machines used in this work are located, two endurance machines have been run night and day throughout the present year. These machines will continue to run continuously for a few months longer to complete the program.

Cerium offers no promise of usefulness as an alloying element in steel. Its use tends toward the presence of non-metallic inclusions and toward troubles consequent upon this defect.

The Worcester section American Society of Mechanical Engineers held its first of this season's meetings in Worcester, Mass., on Tuesday evening, Nov. 13. Following a supper, General T. C. Dickson, commandant Watertown Arsenal, Watertown, Mass., discussed X-ray examination of metals as employed by the Government. Dr. F. C. Langenburg, metallurgist and research engineer Watertown Arsenal, spoke along the same lines, his talk being more technical than that of General Dickson. The plan for industrial mobilization as being worked out by the War Department, as has been described in THE IRON AGE, and the part Worcester industries will be asked to take in connection therewith in case of necessity, was gone into by Capt. L. P. Crim, Army Ordnance Department.

Mellon Tax Plans Approved by Many

Bonus and Radicals May Stand in Way of Enactment by Congress—The Secretary States His Position Clearly

BY L. W. MOFFETT

WASHINGTON, Nov. 13.—Set forth comprehensively and frankly, the proposed tax revision program detailed by Secretary of the Treasury Andrew W. Mellon in a letter to Acting Chairman William R. Green of the House Committee on Ways and Means is recognized by students of taxation as a sound plan to stimulate business and industry through the relief that would be afforded by reducing the tax burden. In his letter, Secretary Mellon suggests that the program be made effective Jan. 1, 1924, so that the benefits arising could be of almost immediate application.

Unfortunately, there is no assurance that the program will be adopted. On the contrary, it is certain that it will be strongly opposed in Congress, at least in a number of important respects. The proposed reductions are based on the calculation that there will be no soldiers' bonus and can only be made "possible if the Government keeps within the program of expenditure which the Bureau of the Budget has laid down at the direction of the President." Even Senator Smoot, who probably will be chairman of the Committee on Finance, is on record to the effect that there will be no reduction in taxes of any kind. The matter of a bonus will be vigorously urged and it is quite evident that it will find strong support in Congress, though its passage is another matter. President Coolidge is understood to take the position of the late President Harding in opposition to a bonus unless some specific means for raising the revenue is provided.

Effects of Bonus

Secretary Mellon said in his letter that a soldiers' bonus would postpone tax reduction not for one but for many years. "It would mean an increase rather than a decrease in taxes, for in the long run it could be paid only out of moneys collected by the Government from the people in the form of taxes." His proposal to reduce surtaxes, as well as normal taxes, would be of great benefit to heavily taxed business and industry, but there will undoubtedly be a movement among radicals in Congress to increase rather than decrease these taxes, and to provide decreases to certain classes, such as the agricultural community. While such agitation is not likely to succeed, it is believed, in actual legislation, its danger is felt to lie in the fact that it will block the Mellon tax revision program, which is held to be in the interest of practically every taxpayer in the country, small and large. About 70 per cent of the reduction would be in the brackets of $10,000 or less, and less than 5 per cent would fall in the brackets over $100,000.

The proposals of the Secretary are in any event extremely interesting and it is contended they may eventuate in being partly adopted at least.

The Reduction in Revenue

Involving a net loss of $323,000,000 annually in revenue, the program in a nutshell is given in the table.

The proposed reduction in taxes is made possible by the fact that, as Secretary Mellon states, "the Government of the United States is firmly established on the basis of having balanced its budget each year since the cessation of hostilities," and the balancing of the budget has included the payment of installments on the public debt out of current revenues. The results attained from the establishment of the budget, Secretary Mellon says, give every reason for hope that ordinary expenditures of the Government can be reduced to a total of not more than $3,500,000,000, of which about $500,000,000 will be fixed charges on account of the sinking fund and other retirements of debt. The plan calls for a reduction of about $1,700,000,000 in departmental estimates.

Reduced Internal Revenues

Secretary Mellon declared that many of the internal revenue taxes, such as the higher brackets of the surtax, "are so rapidly becoming unproductive that it is unsafe to assume that even with no changes in the law the revenues from internal taxes would be maintained. It is proposed to reduce the surtax by commencing their application at $10,000 instead of $6,000, and scaling them progressively upward to 25 per cent at $100,000. This, it is pointed out, will readjust the surtax rates all along the line, "and the Secretary recommends the readjustment not in order to reduce the revenues but as a means of saving the productivity of the surtaxes. * * * At the outset it may involve a temporary loss in revenue, but the government actuary estimates that even during the first year, if the revision is made early enough, the net loss in revenue from all the changes in the surtaxes would be only about $100,000,000, and that in all probability the revenue from the reduced rates will soon equal or exceed what would accrue at the present rates, because of the encouragement which the changes will give to productive business." The present system of surtaxes is declared to be a failure because it seriously impedes productive business.

	Decrease (In millions of dollars)	Increase (In millions of dollars)
Reduction of 25 per cent in tax on earned income	97	..
Reduction in normal tax	92	..
Readjustment of surtaxes	102	..
Capital loss limited to 12½ per cent	..	25
Interest and capital loss deductions limited	..	35
Community property amendment	..	8
Repeal of telegraph and telephone tax	30	..
Repeal of admission taxes	70	..
Total	391	68
	68	
Net loss	323	

Why Business Is Impeded

"Taxpayers subject to the higher rates cannot afford, for example, to invest in American railroads or industries or embark upon new enterprises in the face of taxes that will take 50 per cent or more of any return that may be realized," said Secretary Mellon. "These taxpayers are withdrawing their capital from productive business and investing it instead in tax-exempt securities and adopting other lawful methods

of avoiding the realization of taxable income." He expresses the opinion that the readjustment suggested will not only produce larger revenues but at the same time establish industry and trade on a healthier basis throughout the country. "The alternative is a gradual breakdown in the system, and a perversion of industry that stifles our progress as a nation."

In suggesting a limitation of the deduction of capital losses to 12½ per cent of the loss, the Secretary pointed out that the present revenue law limits the tax on capital gains to 12½ per cent but puts no limit on the capital losses, and he believes it would be sounder taxation policy generally not to recognize either capital gain or capital loss for purposes of income tax.

"In all probability," he said, "more revenue has been lost to the Government by permitting the deduction of capital losses than has been realized by including capital gains as income. So long, however, as our law recognizes capital gains and capital losses for income tax purposes, gain and loss should be placed upon the same basis." It is estimated that this proposal will increase revenue by about $25,000,000. The Secretary also proposes limitation of the deduction from gross income for interest paid during the year and for losses not of a business character to the amount these items exceed the tax-exempt income of the taxpayer. The estimated increase of revenue from this source is $35,000,000.

Tractor with Internal Gear Drive

A type H industrial tractor with internal gear drive as a feature has been placed on the market by the Mercury Mfg. Co., Chicago. An increase of 25 to 35 per cent in the work output efficiency as compared with worm driven models is claimed for the new tractor.

The drive unit is made up of the motor, motor hanger, rear axle housing, rear wheels, rear springs and the driving gears. It is assembled in a single unit which may be readily detached from the frame. Features of the new drive are the balanced arrangement

Internal Gear Drive Is a Feature. The tractor is equipped with the "twin-three" front wheel assembly

of the driving gears within the wheels, the method of positioning the gears, and the provision of an oil and dust tight inclosure for all moving parts.

The motor, joined to a pinion through a self-alining spring coupler, drives a bevel gear in the axle housing, this gear driving in turn the axle pinions to each rear wheel. The axle pinions transmit the power through three idler gears to a large ring gear mounted on the inner diameter of the drive wheel.

A General Electric Co., series-wound, automotive type motor is employed. The coupling between the motor armature and the first driving pinion is of special design. Four coil springs are placed between metal lugs so that the initial starting torque in either direction is cushioned by springs, this arrangement being intended to permit freedom of alinement and to minimize shock. Ball bearings are used throughout the drive unit. The differential is of the conventional six bevel gear type and the axle is of the "full floating" type. The motor cradle, axle housings, wheels and other castings are of electric steel. Driving pinions, gears and differentials are of chrome manganese steel, and are heat treated. The frame, controller, safety features, and wheel arrangement are similar to those employed in the company's previous machine.

The draw bar pull with 18 to 1 gear reduction is 475 lb. normal, and 1700 to 1800 lb. maximum. With 24 to 1 gear reduction the capacity is 600 lb. normal and 2000 to 2100 lb. maximum. The speeds, no load, are as follows: With 18 to 1 gear reduction 660 ft. per min., with 24 to 1 reduction 572 ft. per min. The turning radius is 60 and 75 in. for the twin-three and four-wheel models respectively.

Victoria Chamber of Commerce Condemns Steel Plant

The special committee of the Victoria Chamber of Commerce, appointed to confer with H. J. Landahl, promoter of the Coast Range Steel Corporation and investigate his scheme for the establishment of an iron and steel plant in British Columbia, one-third of the 12 million dollar bonds of which he is asking the Provincial government to guarantee, has turned in its report, which was adopted unanimously by the council at its meeting on Oct. 22. The report of the committee, which contains four members of the Provincial Parliament, is lengthy, but the gist is contained in the last two paragraphs, which are here reproduced: "In view of the inaccuracies as to the general conditions surrounding the industry as placed before us by Mr. Landahl, and having carefully reviewed the whole subject, this committee finds that they cannot change their attitude toward Mr. Landahl's proposal, as shown in the report already presented to you. Generally, we find ourselves opposed to the commitment of the Province to a scheme of this magnitude, believing that to attempt to commence this industry on such a scale as to immediately challenge ruthless competition from established iron centers, would be unwise and courting disaster. We have already stated our view that this industry should be commenced on a moderate scale from an experimental standpoint, either as a government work or by private enterprise assisted by a bonus, in order to demonstrate beyond peradventure the practicability of the industry at this time."

Construction Increased 25 Per Cent in October

October construction showed a surprising increase, according to F. W. Dodge Corporation. Total contracts awarded during the month in the 36 Eastern States amounted to $360,687,000. The increase over September was 25 per cent, whereas the normal season increase is put at 7 per cent. The large increase was heaviest in New York State and northern New Jersey, and in the residential class. Included in last month's record were the following important items: $173,042,000, or 48 per cent of the total, for residential buildings; 18 per cent for public works and utilities; 10 per cent for business buildings; $32,721,000 for industrial buildings, and 7 per cent for educational buildings. The total amount of construction started during the first 10 months of this year has amounted to $2,947,787,000, an increase of 2 per cent over the corresponding period of last year. Contemplated new work reported in October amounted to $556,491,000, an increase of 43 per cent over the September figure.

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ESTABLISHED 1855

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Has America Deserted Europe?

THE anniversary of Armistice Day brought up again the relation of the United States to the distress of Europe. The broadcasted address of ex-President Woodrow Wilson made bitter reference to what it called our "sullen and selfish isolation."

What is our fault with respect to Europe? Is it that we kept out of the League of Nations, which has been so largely directing its activities in misguided economic ways that have tended to counteract the rehabilitation of Europe? Is it that when Mussolini threatened war upon Greece we did not stand ready to send our soldiers and sailors to join with other nations in forbidding hostilities? Did any of the other nations who are members of the league stand ready to do that? Is it that we have not given financial aid to Europe?

Our credits to Europe, which enter into the indebtedness for which there is scant possibility that we shall be repaid in full, ran for nearly two years after the Armistice. If wisely used by Europe, which was not so, those credits would have gone a long way toward Europe's economic rehabilitation. Moreover, we have helped Germany to live and pay something on reparations account by our private and disastrous speculation in German marks. We have helped Europe by bringing about some naval disarmament, thereby reducing military expenses, and we have tried to bring about an impartial examination of the economic position of Germany. Therefore, it is not true that we have deserted Europe, although it is unfortunately true that we have among us those who misguidedly would like to do so.

But what is there now that we can do for Europe? Shall we lend more money; *i. e.*, give more goods? That might easily make things worse, and beyond tiding over some immediate difficulties here and there would probably be most disastrous for Europe in the long run. The fundamental thing for the revival of Europe is to get its people to work and to restore the international division of labor as quickly as possible. As has been said over and over again, Europe cannot pay us in gold for what she buys from the United States. As the National Foreign Trade Convention put it, "payment of foreign balances to the United States can be accomplished only in the degree that we are willing to accept goods and services." Yet by raising higher barriers against imports we prevent the people of Europe from working for us where they are, and by immigration barriers we will not let them come to work for us here. At the same time by undue advances in labor costs we make it harder for Europe to buy what she needs from us.

The real help that we can give to Europe must therefore begin at home in the adjustment of our own affairs. This is a purely materialistic, practical, economic conception. Can idealism point any other effective way?

A New Record in Steel Output?

PRODUCTION of steel ingots this year will approximate the record, which was made in 1917 with 43,619,200 tons. Taking as a basis the ingot output for the first ten months of this year (which involves estimating the output of about 5 per cent of the capacity), if production during this month and next averages less than 4 per cent under the rate shown for October a new record will be made, while if the average is 5 per cent under the October rate the 1917 tonnage will not be equaled.

The year has already made one new record, however, by producing during April at the rate of 49,000,000 tons a year, a rate never before attained. The highest rate during the war had been about 47,700,000 tons a year, in September, 1918. A new half-year's record was also made this year, with about 23,213,243 tons produced in the first six months.

The high point was reached in April, with a daily rate of 157,776 tons. Afterwards there were successive decreases, 1.5 per cent in May, 7.2 per cent in June, 2.5 per cent in July, 3.1 per cent in August and 2.7 per cent in September, making a total decrease in September of 16 per cent from the April rate. Then came October, with a much smaller daily decrease, less than 1 per cent from September. Except when

there is special pressure, production tends to decrease in the late weeks of the year, so that it would be injudicious to assume that the October rate will be continued in full. No violence will be done by making an estimate that production will decrease, from the October rate, by a total of 10 per cent by Dec. 31, or an equivalent of 5 per cent less production this month and next.

The year's ingot production would be about 43,600,000 tons on such an assumption. This would approximate the 1917 production and would exceed that of 1918 by half a million tons, while it would surpass the two next best years, 1916 and 1920, by more than two million tons. All other years than the four mentioned would be out of the reckoning by nine million tons or more.

In other words, 1923 is a year of very heavy steel tonnage, and this can be seen by other comparisons. By no less than 20 per cent 1912 and 1913, with about 30,000,000 tons each, had surpassed any preceding year; thus the 1923 tonnage is about 44 per cent ahead of the two best pre-war years. The country meanwhile has grown in population by scarcely more than 10 per cent, so that per capita consumption is much increased. Increased consumption means harder work, increased efficiency in working up steel or important new uses. As we do not think that men are working harder, they must have improved facilities for making their work effective, which is decidedly better.

Another comparison showing how well steel stands this year is that in the four post-war years, with production ranging from the 40,881,392 tons of 1920 to the 19,224,084 tons of 1921, the average for the four years was 32,000,000 tons a year, and 1923 runs 36 per cent more. Thus the wartime predictions of a large pent-up world demand for steel to be released immediately after the war have signally failed of realization. Instead, steel demand will grow as the world gets into working order. The United States is already in that condition.

Lifting by the Bloc System

ARTHUR POUND'S book, "The Iron Man in Industry," took far too pessimistic a view of the human aspects of the machine in modern production. We find it less difficult, however, to agree with what Mr. Pound has written of the minimum wage in the November *Atlantic*, using the heading "Mr. Everyman, Manager." Over against the concentration of the managing function of production in relatively few hands, he shows how individualized is the management of consumption. The shop worker cooperates with hundreds of others in the complicated processes required for the production of a finished article, all in accord with a policy decided by "the management," and carried out under the direction of a superintendent and foremen. But no one supervises the worker's consumption. He and his wife may be good managers of consumption, or on the other hand they may be such strangers to thrift and buying sense that every dollar in the pay envelope depreciates the moment it comes into their hands.

It is not difficult to figure out, therefore, that the wage which in theory is the lowest on which the statistical "family of five" can maintain an American standard of living, and is therefore called a minimum living wage, becomes a saving wage in the hands of a good manager of consumption. Nor is it hard to see that where, by decree of a Government board, as in the case of the railroad workers, or by monopolistic control exercised by union coal miners or building craftsmen, a minimum wage is established for particular groups of workers, such minimums represent the exploitation of all classes of workers not thus favored. Inevitably agriculture feels the burden, and the farmer moves upon the Government with a demand that he, too, be put on the favored list.

Men and women in the professions and clerical workers are entitled to be heard in the same behalf. Perhaps the faster the blocs multiply the sooner will it be demonstrated that economic laws are still superior to decrees of labor unions or of governments, and that even a nation will find it hard to lift itself by its own bootstraps.

Compensation Issues in Ohio

NEWS as to the recent elections in Ohio, as widely published, furnishes a striking illustration of how one is likely to get an erroneous impression in regard to the attitude of the voters. Nearly all the news about the Ohio selections as published outside of that State indicated that the Ku Klux Klan was almost the only issue, and that the State which had been famous for its sanity and political leadership had lost its balance and shown little judgment in the way the ballots were cast. The accounts all but ignored two really important issues which were decided wisely.

Old age pensions met an overwhelming defeat in the vote on a constitutional amendment which was backed by labor organizations, providing for pensioning all indigent persons 65 years of age. At the same time, Ohio voters adopted in a referendum vote an amendment to the State constitution of utmost importance both to employers and employees. This amendment, which will become effective Jan. 1, wipes out what is known as "open liability" of employers, will eliminate damage suits for large sums for injuries and death, and will check the activities of ambulance chasing lawyers.

The present Ohio laws and workmen's compensation act give an injured employee—or his dependents if he is killed—the right to sue for damages in case the injury, death or occupational disease was a result of the failure of the employer to comply with the law for the protection of the life, health and safety of the employee. Under this limitation the old employer's liability was preserved, and under laws passed subsequently the employer was prohibited from carrying liability insurance as a protection against this liability.

It was found that the only way to eliminate "open liability" and correct this serious defect in Ohio workmen's compensation legislation was through an amendment to the constitution. This amendment was approved by both employers and

employees and was passed by the State Legislature some time ago. The amendment as now finally adopted provides that no person or company contributing to the State compensation fund or compensating his employee direct shall be answerable for damages for injuries or death or for occupational disease resulting from employment. The only recourse the employee will have is to the State compensation fund itself. In case the claim is set up that the injury or death or occupational disease was the result of a failure of the employer to comply with State laws protecting workmen, the complaint is to be heard by the Industrial Commission and, if proved, an additional award may be made of not less than 15 per cent and not more than 50 per cent of the award provided for such cases under the compensation act. This award will be paid out of the State compensation fund, but must be repaid to that fund by the offending employer in added assessments.

Briefly, the people of Ohio in defeating the first amendment referred to above refused to go into a socialistic experiment which has proved so expensive in other countries, while in approving the second amendment the voters indorsed a measure which happily had been agreed upon by representatives of both capital and labor. In spite of all misleading rumors, Ohio still maintains its sanity.

The Coal Commission Again

THE U. S. Coal Commission appears to be like an opera singer who finds it difficult to say farewell. We thought that with the filing of its final, summarizing report it was disappearing, but it has bobbed up again with a report on investments and profits in anthracite mining, underlying which there may be an interesting story.

In one of its preliminary reports the commission intimated that there was to be a valuation of the mines, and in fact such a valuation was made by a committee of distinguished coal mining engineers. Reference to this was omitted from the final report. Comment respecting that may be the reason for the commission publishing a secondary farewell.

In this it devotes itself mainly to a comparison of dividends paid by the nine railroad companies and book figures of investments and revaluations. The commission merely mentions that it" obtained from a committee of experienced mine engineers an expert valuation, which puts the present valuation of lands now operated, including development, plant and equipment and working capital, at $843,500,000. and the present valuation of reserve tonnage in lands not owned by operating companies at $146,400,000; total present valuation of all anthracite properties, $989,900,000 * * *. The book values, allowing for companies and holdings not examined by the accountants, are in the neighborhood of $600,000,000."

The commission summarizes its finding of fact and conclusions in characteristic fashion. It says that "to permit the public as a whole to share in the good fortune of the low-cost, high profit operator, we recommend that differential taxation shall be applied to differential advantage." In other words, the Coal Commission would penalize efficiency. We think that the adoption of such a policy would not be very long in making the price for anthracite coal soar higher than ever. We entertain the old-fashioned economic view that the greatest industrial benefactor is he who is most economical. Instead of being blamed for his profits he ought to be blessed.

THE fundamental cause for the hard times among the farmers is that theoretically they are members of the capitalistic class; that is, they are owners of property which they expect to bear fruit. There is, therefore, economically, no common ground between them and the body of wage earners. Mr. Gompers misses this when he advises the farmers to unionize as a means of curing their troubles. He might as well advise the stockholders in industrial companies to unionize themselves. Some of them have troubles as acute as those of the farmers. The distress of the farmers looms large for the reason that they are numerically the greatest branch of the capitalistic class, though they cannot be called the most intelligent.

CORRESPONDENCE

Treatment of the Modern Industrial Gear

To the Editor: Referring to the paper beginning on page 1037 of THE IRON AGE, Oct. 18, the first paragraph on page 1038, referring to the cut on page 1037, should be amended to read as follows:

"Both by estimation and failure of steels in certain services curve 1 has been established as the stress curve on a certain gear, the maximum stress occurring at the left side of the tooth dropping to 0 at the center of the tooth and going into maximum compression at the right side of the tooth. For the purpose of comparison, the first half of curve 1 has been transposed to base line. Curve 2 is an untreated steel in this service, failing almost immediately through fatigue, the surface and the material to a considerable depth being stressed beyond the ability of the steel to carry the load. Curve 3 is a 0.40 to 0.50 per cent carbon oil-treated steel failing almost as rapidly as curve 2. Curve 7 is a 0.55 to 0.65 per cent carbon oil-treated steel failing in the same way but much more slowly. Curve 4 is the ideal steel to resist just such a load as shown by curve 1. Its strength is proportional to the load it has to carry. The grading off in strength and hardness reduces the heavy initial stress that must be set up when a steel is hardened uniformly throughout. Its maximum strength is ample to carry the peak load. Curve 6 is an alloy steel showing but a slight drop in hardness and strength through the section. While the apparent strength should provide ample margin over the tooth loading, the initial stress in the steel drops the effective strength below curve 1 at the surface, thus starting fatigue, which progresses rapidly. Curve 5 shows the difference between actual strength and internal stresses.

"An effort is being made at this time to duplicate curve 4 with an alloy steel by selecting an analysis that drops the carbon with respect to the eutectoid point in proportion to the carbon steel of curve 4. It can be seen that any curve crossing curve 1 represents a steel that has fallen below the actual tooth stress required in this application."

W. H. PHILLIPS,
Manager Works and Engineering,
R. D. Nuttall Co.

Pittsburgh, Nov. 5.

TRADE WITH JAPAN ACTIVE

Rails Bought for Warehouse Stocks—Machine-Tool Buying by Russia

NEW YORK, Nov. 10.—Trade with Japan and other Far Eastern markets continues fairly active along certain lines, but buying generally seems to be more nearly normal than was at first expected in certain quarters. Undoubtedly much of the recent purchasing, except for the recent award by the Japanese government, has been for stocks in warehouses and, in the instance of black sheets, for galvanizing plants. This has been particularly true of the purchases of light and medium weight rails, many of the small tonnages having been for stock in warehouses. Some of the gas pipe purchased was for this purpose and many of the machine tools went to dealers, who anticipate an early demand of larger proportions than normal.

A large lot of machine tools is being bought for shipment to Russia by Arcos, Ltd., New York. Recent purchases include two Landis grinding machines, six or seven Kearney & Trecker tools and a lot of Brown & Sharpe machines.

Chinese markets continue more active than formerly, accepting most of the available tonnages of second-hand material that are offered at sufficiently low prices and consistently inquiring for wire shorts, which exporters are encountering considerable difficulty in obtaining. In general, export quotations of American mills are reported to be much more satisfactory to foreign buyers than for some time.

By some Japanese export houses it is roughly estimated that current inquiries from Japan for light and heavy sections of rails total between 3000 and 4000 tons, practically all from private sources, and recent purchases have been of about the same quantity. One export house recently received an order from Japan on an inquiry for 1500 tons of 60-lb. rails. No report has yet been received of the award of the small tonnage of grooved girder rails for Kobe municipality and it is stated that the rails for Otaru have been temporarily postponed.

While it is felt by exporters that the quotations of American mills are much more satisfactory than formerly, reports continue of low priced competition from other steel producing centers of the world. Much of the nail business from Japan is said to be still going to Canadian mills, which are quoting lower prices, although in many cases the transaction is handled by an exporter in the United States.

While the American mill price quoted on export shipments of bars is now about $58 per ton, c.i.f. Japan, reports of lower prices by Belgian sellers are current, although the recently mentioned c.i.f. Japanese port price of $44 per ton, base, said to have been made by Belgian sellers is considered rather lower than is generally possible.

One exporter and importer in New York, recently cabled several of the more prominent mills in Belgium asking for a firm offer on a lot of 3000 tons of 60-lb. rails for a user in the United States. The best price obtainable was $46 per ton, c.i.f. Atlantic port. This same importer recently offered a tonnage of mild steel bars, ⅜, ¾ and ⅝-in., the product of a large Czecho-Slovakian maker, at a price of 2.10c. per lb., c.i.f. Atlantic port, the usual differential for size being disregarded. Warehouses to whom the offer was made showed but little interest in the lot at the price mentioned, which they claimed was not sufficiently below the possible domestic price. Sheet bars have been offered without takers at $37 to $38 per ton at Atlantic port.

It seems as though the sale by an exporter and importer in New York of 1000 tons of spiegeleisen to Belgium, a few weeks ago, was the last for some time. A recent cable from London discloses that British sellers are now offering to accept orders at £8 per ton, f.o.b. British port, and intimate that on a large tonnage a further concession might be made. Caucasian manganese ore is now quotable at 38c. per unit for ordinary and 41c. per unit for washed. An importer of Caucasian ore reports the conclusion of a contract covering a large lot of manganese ore for delivery to a furnace in the East during the first quarter of next year.

The Canadian Government Trade Commissioner, Frederic Hudd, 44 Whitehall Street, New York, offers to put interested purchasers in touch with a St. John, New Brunswick, company that wishes to dispose of 3500 tons of 50-lb. relaying rails, which are at Charlottetown, Prince Edward Island. The lot is offered at $22.50 per ton, f.o.b. cars, Charlottetown, or $24 per ton, in bond, f.a.s. Atlantic port.

Exporters handling sales of machine tools to the Far East claim that the current and future needs of Japan in this line as a result of the earthquake have been in many cases grossly overestimated, although buying has been slightly heavier than normal and a not inconsiderable demand is expected to develop in the next few months. One manufacturer of tools in this country is so certain of a good demand for his line that it is reported that he has made a consignment of three carloads to a Japanese dealer through a New York exporter, standing most of the expense himself.

One exporter in close touch with the Japanese market points out that while there were two or three large manufacturing companies in the devastated area, with plants equipped with about 5000 machines and tools, large and small, there is no reason to believe that these manufacturers will re-equip their establishments fully until such time as demand warrants expansion to former capacity and in at least one case a large company is liquidating entirely, rather than rebuild and re-equip completely as would be necessary. However, there has been a fair demand for tools. In one recent instance a large Japanese export house closed on a list of 15 lathes and in another instance a list of 65 small and large tools went to a leading American toolmaker through its Japanese representative.

The recent award of 20,000 tons of black and galvanized sheets, plain and corrugated, by the Imperial Japanese Government direct to the United States Steel Products Co. and 2000 metric tons of wire nails to the Youngstown Sheet & Tube Co., and 1000 metric tons to the Pittsburgh Steel Co., is said to be the first part of several sizeable lots of material that may be purchased by the Government direct from the manufacturer for use in the devastated area. Shipment, it is understood, will be handled through the Imperial Japanese Navy, which generally purchases direct from maker in the United States and maintains an office in New York at 1 Madison Avenue. The original terms of payment were cash on delivery at Japanese port. Whether these terms were acceptable to the American mills who booked the business or have been modified has not been ascertained.

A large building construction company is being organized in Tokio to undertake the construction of commercial and industrial buildings on the unit basis, says a report received by the Department of Commerce. The company plans to specialize in four-story reinforced concrete buildings designed to withstand earthquake shocks. Funds for the promotion will, according to present plans, be obtained largely from the Government at a low interest rate. At present the company is awaiting announcement of the areas set aside for industrial and business purposes.

Heat Conductivity

Engineering data on heat insulation are being distributed through the Celite Products Co., Chicago, reproduced from blueprints and charts on small sheets 3¾ x 6¾ in. for use in pocket data books. They are worked out in B.t.u. per sq. ft. per hr., varying with the temperature and covering comparative conductivities of various forms of products made by the company. From these charts it is easy to figure heat losses through various wall constructions of furnaces, etc., including ovens, boilers, kilns, gas and glass equipment, oil stills, etc. Copies of these sheets will be sent by the company to engineers who request them.

British Iron and Steel Market

Japanese Government Buying Heavy Tonnages of Black and Galvanized Sheets—Improvement in Steel Continues—Ruhr Steel Rejected

(By Cable)

LONDON, ENGLAND, Nov. 13.

Pig iron is firm and active on increased domestic buying spreading over the first quarter of 1924. There is no sign of expansion of Cleveland output and lower prices are improbable. Hematite is improving on increased demand from steel works and makers are firm on prices.

Steel demand is expanding in the domestic market but export markets generally are still quiet except for specialties. Australia has bought plates. Japan is inquiring for railroad construction material. Recent contracts include 6000 tons of rails for India, to Ebbw Vale Steel, Iron & Coal Co., Ltd. The Tees Side Bridge and Engineering Works, Ltd., is to erect 12 oil tanks for the British Admirality in the Far East [Singapore?]. Vickers, Ltd., has secured the contract for guns and boilers for new Greek destroyers.

October exports of pig iron, excluding ferroalloys, amounted to 54,829 gross tons. The total export tonnage of all iron and steel was 388,599 tons.

Continental position is obscure and there have been few sales, owing to uncertainties. Sterling prices generally are unchanged. The Japanese Government is inquiring for 1500 tons of nails.

It is reported that steel from the Ruhr, arriving in the United Kingdom, has been rejected, owing to unsuitability.

In Belgium the workers have been granted a 5 per cent increase in wages. It is proposed to advance railroad freight rates 10 per cent on Jan. 1.

In France, the Société Anonyme des Laminoirs, Hauts-Fourneaux, Forges, Fonderies et Usines de la Providence has secured 8000 tons of rails to be rolled for Holland.

In Latvia the Phoenix company is restarting the Riga plant.

In Germany, the Becker group has concluded an agreement with the French Ruhr authorities. Thyssen is closing his works entirely. Krupps are discharging labor.

Tin plate is strong on continued good sales in both the domestic and the export markets, but chiefly domestic. The works are well placed and some makers are asking well over the schedule prices.

Galvanized sheets are firm on fair buying but the results from the Indian festival have been disappointing. Japan is buying merchant parcels for early shipment. The works are heavily sold for a few months ahead.

Japanese demand for black sheets is maintained; 6 x 3, 13's, 107 lb. selling up to £21 10s. (4.20c. per lb.) f.o.b. in merchant lots for January and February shipment. The works are quoting June as the earliest. The Japanese Government is inquiring for 5000 tons of sheets.

We quote per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.38 per £1, as follows:

Durham coke, delivered	£1	19s.	to £2	0s.	$8.54 to	$8.76
Bilbao Rubio ore†	1	4			5.25	
Cleveland No. 1 foundry	5	7½			23.54	
Cleveland No. 3 foundry	5	0			21.90	
Cleveland No. 4 foundry	4	19			21.68	
Cleveland No. 4 forge	4	17½	to 4	18	21.35 to	21.46
Cleveland basic	4	12½	to 4	15	20.25 to	21.18
East Coast mixed	5	0 upward			21.90 upward	
East Coast hematite	4	19	to 5	0	21.68 to	21.90
Ferromanganese	17	0			74.46	
Ferromanganese*	17	0			74.46	
Rails, 60 lb. and up	8	10	to 9	10	37.23 to	41.61
Billets	7	15	to 8	5	33.94 to	36.13
Sheet and tin plate bars, Welsh	£9	2½s.			$39.96	
Tin plates, base box	1	3⅛	to £1	3½s.	5.06 to	$5.14
					C. per Lb.	
Ship plates	9	5	to 9	15	1.81 to	1.91
Boiler plates	12	10	to 13	0	2.44 to	2.54
Tees	9	15	to 10	0	1.91 to	1.95
Channels	9	0	to 9	10	1.76 to	1.86
Beams	8	15	to 9	5	1.71 to	1.81
Round bars, ¾ to 3 in.	10	5	to 10	15	2.00 to	2.10
Galvanized sheets, 24 g.	19	0	to 19	5	3.71 to	3.76
Black sheets, 24 gage	14	0			2.74	
Black sheets, Japanese specifications	15	5			2.98	
Steel hoops	12	0	& 12	10*	2.35 &	2.44*
Cold rolled steel strip, 20 gage	17	5			3.37	
Cotton ties, Indian specifications	15	0			2.93	

*Export price. †Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

(Nominal)

Foundry pig iron:						
Belgium	£5	5s.	to £5	10s.	$23.00 to	$24.09
France	5	5	to 5	10	23.00 to	24.09
Luxemburg	5	5	to 5	10	23.00 to	24.09
Billets (nominal):						
Belgium	7	0			30.66	
France	7	0			30.66	
Merchant bars:					C. per Lb.	
Belgium	8	0	to 8	2½	1.56 to	1.59
Luxemburg	8	5			1.61	
France	8	5			1.61	
Joists (beams):						
Belgium	7	12½	to 7	15	1.49 to	1.51
Luxemburg	8	2½			1.59	
France	7	17½			1.54	
Angles:						
Belgium	8	0	to 8	5	1.56 to	1.59
¼-in. plates:						
Belgium	8	10			1.66	
Germany	8	10			1.66	
⅜-in. plates:						
Luxemburg	8	7½			1.64	
Belgium	8	7½	to 8	10	1.64 to	1.66

Government Expenditure for Railroad Equipment to Relieve Unemployment—Greater Demand for Pig Iron

LONDON, ENGLAND, Nov. 1.—Considerable improvement is noticeable in the iron and steel markets, mainly due to an increase in the demand for pig iron. The output is limited and, though there is talk of additional furnaces being put into blast, no such steps have yet been taken, and stocks, in consequence, are being reduced considerably. The result is that makers have seized the bull by the horns and advanced their selling prices. The most active buyers at present have been Scotland, Cleveland iron being much cheaper than their own and contracts have been entered into for some few months ahead; some makers, Midland included, have sold their output for the rest of the year. The present price of No. 3 Cleveland G. M. B. is 100s. per ton and of East Coast hematite 99s. 6d. to 100s. a ton, with little indication of prices receding again.

In finished steel a good deal of interest has been displayed by the government's decision to spend large sums of money on work to relieve the unemployment in the country, and it is anticipated that the iron and steel trades will benefit to a considerable degree. The railroad companies are also displaying their programs which, if carried out, will call for larger quantities of iron and steel. The London, Midland & Scottish Railroad contemplates an expenditure of £4,500,000. The Underground Railroads are spending £6,000,000. In addition, various foreign contracts have been awarded for railroad material. These, of course, will all help to keep certain plants employed, but there is as yet no relief in shipbuilding. The dispute of boilermakers drags on, and the yards are almost empty. Far Eastern markets continue to absorb large quantities of thin, plain and galvanized sheets, and the tin plate trade is more active than has been the case for some time past.

In connection with the recent amalgamation of the interests of Richard Thomas & Co., the largest tin plate manufacturers in the world, with those of the Grovesend Steel & Tinplate Co., the former concern is making a new issue to its own shareholders of 438,666 6½ per cent accumulative preference shares of £1, and 219,333 ordinary shares of £1. Both classes of shares have been offered at par to ordinary shareholders in the proportion of two preference shares plus one ordinary share for every 10 ordinary of the present holding.

German Industrial Conditions Chaotic

Ruhr Works Suspending Operation—Prices Reduced in Unoccupied Area—Industrial Concerns Have Taken Up Banking Business

BERLIN, GERMANY, Oct. 29.—The internal difficulties of Germany have been increased enormously by the unprecedented slump in the exchange, and the prevailing conditions make it extremely difficult for trade and industry to continue. The daily struggle with depreciation is using up much of the commercial and industrial energies which would in normal times be diverted into productive channels. Through the depreciation, requirements for legal tender have grown to such an extent that the Reichsbank is unable to supply sufficient quantities of currency and many firms are unable to pay wages and salaries. This leads to controversies, as any delay in payment results in depreciation and there are many spasmodic strikes.

The issue of gold mark notes for general circulation is only gradually taking place. All this is hampering trade and industry and as a result the State railroads, some towns, and many private firms are again issuing "Notgeld" (emergency money) with the acquiescence of the State. Previous issues have been abused for the acquiring of State currency and have thus largely helped to depreciate the mark. Now several German States, provinces and even industrial concerns are issuing non-depreciating "Notgeld" in order to assist commercial intercourse. The Government has published a new order to the effect that an equivalent amount in Government gold bonds must be deposited with every issue of non-depreciating Notgeld. Some States are, however, issuing their own independent gold bonds and the great quantity of different local currencies in circulation is causing much confusion.

Industrial Company Banks

The inflation of currency has made banking business difficult and several industries have established banks for the special needs of their line. The iron and engineering industry has not founded any separate banks, but the great companies have acquired considerable influence in some of the large banking institutions. Some months ago much attention was attracted by the action of Hugo Stinnes, who took a large interest in the Berliner Handelsgesellschaft, one of the greatest German banks. Now the Diskonto-Gesellschaft is entering into similar relations with the Otto Wolff concern. There are even rumors that the company intends to separate the Schaffhausenschen Bankverein from the Diskonto-Gesellschaft and transform the former into an independent bank directly connected with the company.

Gold Mark Iron and Steel Prices

Many German prices are above international level and as a result of the depression in business, several industries have been forced to lower their gold mark prices. Iron and steel are cheaper, and the steel combine has issued new prices. The discrimination in the price of material used for domestic orders, or for export contracts has been dropped, and quotations substituted for the occupied and the unoccupied areas. For the occupied districts previous prices for material for export orders continue but for the other parts of the country new prices have come into force which in the case of bar iron for instance mean a reduction from 240 to 191 goldmarks per ton on material for purely domestic contracts. In the case of iron used on foreign orders, however, there is an increase from the former price of 170 to 191 goldmarks. Customers are still obliged to pay 30 per cent of the order in cash if possible. The surcharge for cold rolled screw iron is also reduced to 15 goldmarks. Works goldmark prices per metric tons for basic and open hearth material are now as follows:

	Occupied Area	Unoccupied Area
Ingots	151.40	132.10
Blooms	173.00	150.90
Billets	184.70	161.10
Sheet bars	191.70	167.20
Shapes	218.30	190.40
Bar iron	219.00	191.00
Wire rods	232.10	202.14
Sheets:		
More than 5 mm.	246.90	215.30
3 to 5 mm.	275.80	240.80
1 to 3 mm.	310.60	270.90
Less than 1 mm.	344.80	300.70

Traders have declared that they are unable to do business under the condition of payment stipulated by producers and have withdrawn their representatives from the price committee of the Steel combine on which producers, consumers and traders were equally represented. Thus the situation in the iron and steel market is not clear as traders are not recognizing the quotations of the Steel combine.

Business at Low Level

During the last few months the new orders of construction companies are only about one-third of the average monthly amount of last year and prospects for the near future are considered bad. There is an acute scarcity of working capital and domestic and export demand is diminishing.

The figures of iron and steel production in the Saar show a decrease of nearly 50 per cent during the first half of the present year compared with the last six months of 1922. This is due largely to extensive strikes since February. Production decreased rapidly to a minimum during March, but with the finish of the strikes production figures rose again and during June nearly reached the January figure for open hearth steel while the production of pig iron and basic steel continued much smaller.

Conditions in the occupied area are regarded with considerable anxiety now, as many works have dismissed their employees and even the mines are not working the full number of shifts per week. The August Thyssen works at Hamborn and the Bochumer Verein have been closed down and the Gute Hoffnungshütte has stopped production in most of its plants. The Westphalian steel works belonging to the Rombacher Hüttenwerke has dismissed all its workmen and given notice to the staff. The mines in the Oberhausener districts, are also closed. Altogether about 25 per cent of the mines will be idle and about 150,000 men will be out of work.

Rhenish companies are, however, actively widening their connections in the unoccupied area in order to increase sales on the resumption of full working activity. They have lately made considerable purchases of shares of central German engineering and machine tool works and negotiations for the Interessengemeinschaften are being conducted. An understanding between the Rheinmetall Gesellschaft, Düsseldorf, and the Hansa Lloyd works, Bremen, has been contemplated.

The Saco-Lowell Shops, Boston, textile machinery, has closed its foundry at East Deering, Me., operated since labor troubles started some months ago at the company's Biddeford, Me. foundry.

Iron and Steel Markets

ACTIVITY IN PIG IRON

Important Buyers in the Market After $10 Decline

Railroad Equipment Orders Wait—Russia Buys Machine Tools

Through another week the finished steel market has shown a unanimity of buyers in the policy of reducing stocks against Jan. 1 and an almost equal unanimity of sellers in adjusting output to demand and leaving prices unchanged. The pig iron market has furnished the real news. Inquiries are the largest in months, while actual buying by discerning consumers at $1 a ton or more below last week's prices is especially significant after a $10 decline in seven months.

The Steel Corporation's report of 363,000 tons decline in bookings last month and the falling off of less than 1 per cent in the country's steel output in October check up closely with an 85 to 90 per cent operation by the corporation and a 70 per cent average for independent producers. Today the corporation is running at 86 or 87 per cent and the independents at a little under the 70 mark.

Current output, November orders at close to the October rate, and all that is known of the state of consumers' stocks point to a rate of consumption but little less than that of the past three months.

The advance outline of railroad equipment buying for 1924 is sufficiently promising, but actual orders are held back. Three large car plants in the Chicago and St. Louis districts are expected to close Jan. 1, while another will probably shut down within 30 days.

Some reflection of these conditions is seen in the blowing out of a blast furnace at Gary and the expected stopping of another at Gary and one at South Chicago.

Rail orders still cut a good figure in current bookings. The Southern Railway has placed 46,000 tons with the Alabama mill, 2200 tons at Chicago and 7200 tons elsewhere. The L. & N. has bought 10,500 tons.

Orders for repairs to 800 cars, an inquiry for repairs to 3000 cars and the request for prices by three roads on 600 new cars are the actual developments in the equipment field.

Among fabricated steel bookings of the week, calling in all for upward of 14,000 tons for 17 projects, and among the 22,000 tons of fresh inquiries, railroad bridge work is noteworthy, though still a small percentage of the total.

Tonnage rates of sheet and tin mill workers have been advanced 1½ per cent. The average price of sheets was $3.75 per 100 lb. for the past two months, compared with $3.70 for July and August. The new wage rate is the highest since war time.

It is understood that the Steel Corporation's sheet bar price for the first quarter of 1924 is $42.50, or the same as for the present quarter.

A Belgian mill recently quoted $46 on rails, c.i.f. American Atlantic port, or $1 under the domestic price at mill. Foreign sheet bars have been offered at $37 to $38 ex-ship on this side, against the present Pittsburgh price of $42.50.

Inquiries for pig iron have increased markedly in nearly all centers, with evidence that important buyers have concluded that after the long descent of prices it would be well to cover for at least the first quarter of the new year. Price concessions continue, but these are overshadowed by the increased buying interest. For example, at Buffalo, where $20 was shaded on a sale of 15,000 tons of foundry iron, much heavier buying is probable, and in eastern Pennsylvania, where $21 has been named on round tonnages, early buying on a large scale is expected. The declines of the week include $2 on charcoal and 50c. to $1 on foundry grades in the leading centers. At Pittsburgh the price of malleable iron is $2 lower and that of steel making grades $1.50 lower on sales of moderate size.

More activity has developed in the scrap market and prices have been marked upon most grades in several cities. This sign of recovery is naturally linked with what is happening in pig iron.

Russia has just bought some American machine tools—not many, but it is said that more orders are to follow. The late sales were for cash, New York.

THE IRON AGE pig iron composite price has fallen to $20.94, from $22.02 last week. It is now $9.92 (32 per cent) below the level of early April.

In contrast, THE IRON AGE composite price for finished steel, standing at 2.775c. per lb. for 17 consecutive weeks (after remaining at 2.789c. for 11 weeks), is only 1¼ per cent below the 2.810c. of early April.

Pittsburgh

Increased Orders for Plates, Shapes and Bars —Pig Iron Prices Decline

PITTSBURGH, Nov. 13.—A further decline in the pig iron market, represented by a drop of 50c. a ton in foundry, $2 in malleable and $1.50 in the steel-making grades, is the outstanding feature of the local situation. Whether this low-priced business means, as it often does, a turning point in the market, remains to be seen, but the more common impression is that the sales remove weakly held stocks and that further declines are improbable on the basis of costs. The market is now $9 to $10 a ton below the peak prices reached earlier in the year, and although there has been no particular effect upon steel due to that recession or to the decline in scrap prices, those changes still afford a favorite argument for buyers seeking lower steel prices.

Attention of the steel consuming trade seems to be more firmly riveted than it has been on the end of the year inventories, and purchases are being made to conform closely with the desire to keep down year-end stocks of raw materials. Most of the manufacturers are able to make very prompt deliveries on practically all products, and consumers and distributors are thereby encouraged to limit their purchases to actual needs. Such requirements have been somewhat heavier in the past week than they were previously, and reports of

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Nov. 13, 1923	Nov. 6, 1923	Oct. 16, 1923	Nov. 14, 1922
No. 2X, Philadelphia‡	$22.64	$22.64	$24.26	$31.14
No. 2, Valley furnace†	*22.00*	22.50	24.00	28.00
No. 2, Southern, Cin'ti†	*23.05*	23.55	24.05	27.05
No. 2, Birmingham, Ala.†	*19.00*	19.50	20.00	23.00
No. 2 foundry, Chicago*	*22.50*	24.00	25.00	30.00
Basic, del'd, eastern Pa.	23.00	23.00	24.50	28.14
Basic, Valley furnace	*20.50*	22.00	24.00	28.00
Valley Bessemer, del. P'gh.	26.26	26.26	26.76	33.77
Malleable, Chicago*	*22.50*	24.00	25.00	30.00
Malleable, Valley	*20.00*	22.00	23.50	29.00
Gray forge, Pittsburgh	*23.26*	23.76	25.26	29.77
L. S. charcoal, Chicago	*28.15*	29.15	30.04	36.15
Ferromanganese, furnace	110.00	110.00	110.00	100.00

Rails, Billets, etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	40.00	40.00	40.00	38.00
O.-h. billets, Pittsburgh	40.00	40.00	40.00	38.00
O.-h. sheet bars, P'gh.	42.50	42.50	42.50	38.00
Forging billets, base, P'gh.	45.00	45.00	47.50	45.00
O.-h. billets, Phila.	45.17	45.17	45.17	45.17
Wire rods, Pittsburgh	51.00	51.00	51.00	45.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	2.40	2.40	2.40	2.00
Light rails at mill	**2.25**	2.15	2.25	2.00

Finished Iron and Steel, *Per Lb. to Large Buyers:*	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.67	2.67	2.67	2.325
Iron bars, Chicago	2.40	2.40	2.40	2.50
Steel bars, Pittsburgh	2.40	2.40	2.40	2.00
Steel bars, Chicago	2.50	2.50	2.50	2.10
Steel bars, New York	2.74	2.74	2.74	2.34
Tank plates, Pittsburgh	2.50	2.50	2.50	2.00
Tank plates, Chicago	2.60	2.60	2.60	2.30
Tank plates, New York	2.74	2.74	2.84	2.34
Beams, Pittsburgh	2.50	2.50	2.50	2.00
Beams, Chicago	2.60	2.60	2.60	2.20
Beams, New York	2.74	2.74	2.84	2.34
Steel hoops, Pittsburgh	3.15	3.15	3.15	2.90

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire, *Per Lb. to Large Buyers:*	Nov. 13, 1923 Cents	Nov. 6, 1923 Cents	Oct. 16, 1923 Cents	Nov. 14, 1922 Cents
Sheets, black, No. 28, P'gh.	3.75	3.75	3.75	3.35
Sheets, galv., No. 28, P'gh.	5.00	5.00	5.00	4.50
Sheets, blue an'l'd, 9 & 10	3.00	3.00	3.00	2.60
Wire nails, Pittsburgh	3.00	3.00	3.00	2.70
Plain wire, Pittsburgh	2.75	2.75	2.75	2.45
Barbed wire, galv., P'gh.	3.80	3.80	3.80	3.35
Tin plate, 100-lb. box, P'gh.	$5.50	$5.50	$5.50	$4.75

Old Material, Per Gross Ton:				
Carwheels, Chicago	$17.50	$17.50	$17.50	$25.00
Carwheels, Philadelphia	17.50	17.50	20.00	21.00
Heavy steel scrap, P'gh.	16.00	15.50	16.00	20.50
Heavy steel scrap, Phila.	15.00	15.00	15.00	16.50
Heavy steel scrap, Ch'go	14.00	13.50	14.00	17.50
No. 1 cast, Pittsburgh	18.50	18.50	19.50	23.50
No. 1 cast, Philadelphia	19.00	19.00	19.50	22.00
No. 1 cast, Ch'go (net ton)	18.00	18.00	19.00	20.50
No. 1 RR. wrot. Phila.	17.00	17.00	17.50	19.00
No. 1 RR. wrot. Ch'go (net)	12.50	12.00	13.00	16.00

Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$3.75	$3.75	$3.75	$7.00
Foundry coke, prompt	4.75	4.75	4.75	8.50

Metals, *Per Lb. to Large Buyers:*	Cents	Cents	Cents	Cents
Lake copper, New York	13.25	13.00	13.12½	14.12½
Electrolytic copper, refinery	13.50	12.37½	12.62½	13.62½
Zinc, St. Louis	6.45	6.35	6.30	7.25
Zinc, New York	6.80	6.75	6.65	7.60
Lead, St. Louis	6.55	6.45	6.60	6.90
Lead, New York	6.85	6.75	6.85	7.25
Tin (Straits), New York	44.37½	41.87½	41.50	36.87½
Antimony (Asiatic), N. Y.	9.25	9.00	7.50	6.60

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Composite Price, Nov. 13, 1923, Finished Steel, 2.775c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets

These products constitute 88 per cent of the United States output of finished steel

Nov. 5, 1923,	2.775c.
Oct. 16, 1923,	2.775c.
Nov. 14, 1922,	2.446c.
10-year pre-war average,	1.689c.

Composite Price, Nov. 13, 1923, Pig Iron, $20.94 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham

Nov. 5, 1923,	$22.02
Oct. 16, 1923,	23.54
Nov. 14, 1922,	28.02
10-year pre-war average,	15.72

increased orders are fairly common in plates, shapes and bars, and also in wire products. There seems to be some falling away in both orders and specifications for hot-rolled flats, notably in strips from the automotive industry, which, although enjoying the highest rate of operation for November in its history, is very cautious in its steel purchases. Indeed, the leading maker of low-priced cars, through the means of shipment suspensions, is making a pretty determined effort to bring down prices.

Adherence to quoted prices is remarkably rigid in plates, shapes and bars, the strength of the latter being a matter of comment in the face of the fact that the market still is weak on the product of bars. Recent reduction of $5 a ton in cold-finished steel bars to 3c., base, does not appear to have resulted in much more stability than the market had at the former level. It is a buyers' market on bolts, nuts and rivets, with the latter selling as low as $2.60, base, on attractive orders. Concessions from regular market quotations on sheets still are common, and there are reports that some makers have gone as low as 3.50c., base, on black sheets to keep their mills going economically. Prices of wire products and of tin plate and pipe are well maintained. The American Sheet & Tin Plate Co. has put upon its books all the tin plate it can produce over the first six months of next year on a 90 per cent operation, and late last week shared in the distribution of sheet business placed through the Japanese Embassy to the extent of 22,000 tons at a price substantially higher than its own domestic quotations.

The scrap market shows a strong tendency, but conditions in the coal and coke market remain very unfavorable from the producers' standpoint. There is practically no market for coke and only a limited one for coal, and then at very low prices.

Pig Iron.—Prices have given ground on comparatively moderate sales. The Allegheny Steel Co. has closed for about 2000 tons of basic iron, which it was able to buy at $20.50. Valley furnace, as compared

with $22 last week, and at which there was one sale this week amounting to 7500 tons. The latter tonnage, however, was closed without competition, the business going to firms closely allied with the purchaser. Bessemer iron also shows a decline of $1.50 a ton, small sales having been made at $23, Valley furnace, and more of that grade being available at that price. The lowest known sales of foundry iron were at $22, Valley furnace, and the same price now is being quoted, f.o.b. Johnstown, both points having the same rate of freight in Pittsburgh. We note one sale of 500 tons of malleable iron at $20, Valley furnace, and a like tonnage has been sold for delivery from Buffalo at the same delivered price or $21.76. Lake Superior charcoal iron has been marked down $2 a ton to a base of $25, furnace, and several hundred tons, including one lot of 500 tons, have been sold at the new level. Low phosphorus iron still is priced at $30, Valley furnace, but that quotation is merely nominal, since there has been no sale recently

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$20.50
Bessemer	23.00
Gray forge	21.50
No. 2 foundry	20.00
No. 3 foundry	21.50
Malleable	20.00
Low phosphorus, copper free	30.00

Ferroalloys—Sales are few and small, as consumers have practically all the material they are likely to require over the remainder of the year, and expectations of lower prices tend to restrain purchases for early 1924 delivery. Ferromanganese still is quoted at $110, seaboard, by both domestic and British producers, but not much business is being done because of some fresh resale offerings. Some consumers have more of this material coming to them than they see a need for, and are endeavoring to dispose of the surplus. This material has been offered at $108 and it is believed it could be bought for a little less. There is not enough demand for 50 per cent ferrosilicon to determine definitely just where prices are. Makers are quoting $82.50, delivered, but it is believed would consider less. Prices are given on page 1353.

Sheets.—Buying still reflects marked conservatism on the part of consumers, notably the automotive industry, which, no doubt influenced by the price concessions being made by the mills anxious to keep going and the belief that an advance is not immediately ahead, is letting its inventories run down. A Youngstown district manufacturer, having in mind full and economical operations, is reported to have taken considerable black sheet business lately at 3.50c., base. This is somewhat more of a cut than other producers are willing to make for the sake of keeping in operation. Several of the independent manufacturers have adopted the Steel Corporation schedules and are curtailing production rather than cut prices. It is understood that more than half of the Japanese Government sheets placed with the American Sheet & Tinplate Co. is for No. 28 gage material, and the order includes no tonnage thinner than No. 30 gage. This business, which is for delivery by the end of the year, is a material aid to the company's operations, which are above 80 per cent capacity as against little more than 50 per cent by independent companies. Prices are given on page 1352.

Semi-Finished Steel—Trading is extremely slack, in keeping with the fact that finished products are not selling with much freedom, while producers are able to make such prompt delivery that finishing mills are inclined to let them carry the stocks. Doubt that present prices can be maintained also deters buying, although it is understood the Steel Corporation price of sheet bars for first quarter is $42.50, the same price as for the current quarter. The market is fairly firm on sheet bars, but leans in buyer's favor on billets and slabs. Activity is lacking in wire rods, but neither that fact nor the lower level of billets yet seems to have affected the price, which remains stationary at $51, base. Skelp at 2.40c. is an untested price. Prices are given on page 1353.

Wire Products—Orders for the commoner products, particularly nails, for prompt delivery are numerous and reach a fairly sizable aggregate, but there is very little forward buying, and mill operations are maintained largely by production for stock against spring demands. Both jobbers and manufacturing consumers are endeavoring just now to keep down their inventories, and the fact that they can secure very prompt deliveries on their requirements also tends to restrict their purchases. Some of the smaller producers in the Middle West are giving away a portion of their freight advantage over Pittsburgh district mills, this being particularly common in coated nails, but the larger producers are adhering firmly to quoted prices. Quotations are given on page 1352.

Tin Plate.—Barring unforeseen developments, the American Sheet & Tinplate Co. is assured of 90 per cent operations for the first half of next year on the orders booked since it opened its books two weeks ago. Demands upon independent makers for early 1924 delivery are expanding and all indications now point to an active and firm market at least over the first half of next year.

Tubular Goods—Outlook for early betterment in the demand for oil well and line pipe has been somewhat dimmed by fresh recessions in crude oil prices. Demand for this class of pipe for some time has been on a dwindling scale, but mill operations have been sustained fairly well by a considerable tonnage that was on maker's books when the oil market started to decline. These orders are pretty well completed, and some lapweld pipe capacity has suspended in the absence of fresh business. New business also is lighter in standard pipe than it was recently, but distributors are exerting a good deal of pressure on the mills for shipment on old orders in their efforts to round out their stocks before the spring demand develops. Boiler tube business is light, and with makers steadily catching up with their old obligations, the need of new orders is becoming more urgent. Some shading of regular prices on tubes is noted, but on pipe there is close adherence to the cards dated, April 19, last, on steel pipe and Jan. 22, last, on wrought iron pipe. Discounts are given on page 1352.

Cold-Finished Steel Bars and Shafting—The leading producer of ground shafting, effective No. 8, reduced prices $5 per ton to a base of 3.40c. f.o.b. mill, for carload lots, and 3.65c. for less than carloads. This revision is in keeping with the decline noted a week ago in other kinds of cold-finished steel bars and shafting, which were marked down $5 per ton to 3c. base, Pittsburgh. While business in the latter shows some improvement, there still is an absence of forward buying, which, in the case of the automotive industry, probably finds explanation in the fact that Chicago district makers are shading even the new price to secure desirable accounts.

Steel Rails—Demand for light rails still reflects the dull and unsettled coal situation, there being little incentive to purchases by soft coal mine operators with only partial and generally unprofitable operations possible. Leading makers, who roll these sections from new steel, are holding rigidly to 2.25c., base, and losing business rather than meet competition from rerolled sections, which are to be had $5 to $8 per ton less. The local unit of the Steel Corporation is pretty well sold up against probable production of standard rails over the first half of 1924, with some roads ordinarily served from Pittsburgh still to be heard from.

We quote light rails rolled from billets at 2.25c. base (25-lb. to 45-lb.); rerolled rails, 1.85c. to 2c. base (12-lb. to 45-lb.), f.o.b. mill; standard rails, $43 per gross ton mill, for Bessemer and open-hearth sections.

Structural Material.—Mills in this territory still are resisting efforts of buyers to secure tonnage at less than 2.50c. Demands run chiefly to small tonnages for prompt delivery, but the aggregate is said to be somewhat heavier than it was last week or the week before. Fort Pitt Bridge Works was the successful bidder of the new plant of the Standard Sanitary Mfg. Co. in Baltimore, for which 3700 tons of steel will be required. In this immediate territory most of the structural lettings involve small tonnages, and there is no sign of life yet in two or three good sized projects which originally appeared earlier in the year. Plain material prices are given on page 1352.

Iron and Steel Bars.—Small lot sales of steel bars are fairly numerous, and it is claimed that it has not been necessary to shade the regular prices of 2.40c., base, to get such orders. Very prompt delivery, however, has been a requisite. Recent cut in iron bar prices does not seem to be much of a stimulus to demand.

We quote soft steel bars, rolled from billets, at 2.40c. base; bars for cold-finishing of screw stock analysis, $3 per ton over base; reinforcing bars, rolled from billets, 2.40c. base; refined iron bars, 3.25c. base, in carload lots or more, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets.—Competition for business in bolts and nuts still is sharp enough to keep actual selling prices below public quotations. On rivets also the market is favorable to buyers, particularly on those sizes where present extras permit increased margins between costs and selling prices. On large lots $2.65, base, 100 lb., is a fairly common price. Prices and discounts are given on page 1352.

Cold-Rolled Strips.—Business could be better, but there seems to be enough to maintain a fair rate of operations for all mills and there is not much shading of the regular price of 5c., base, Pittsburgh. Some of the automobile parts makers, under pressure from their customers, are striving for lower prices, but have not yet been successful.

Hot-Rolled Flats—Business in these products at best is only moderate and prices, except possibly of hoops, are still favorable to buyers. Prices are really soft on strips, since there have been some suspension of shipments on contracts and the mills receiving them need orders for rolling over the remainder of the year. It is claimed that one large lot of hoops recently was closed at 3c., base, but as a general rule, makers do not want business badly enough to go below 3.15c. on the hoop sizes and gages. Only small tonnages of bands or strips can be sold above 3c., base. Prices are given on page 1353.

Plates—Some fairly large tonnages are embraced by railroad car orders recently placed or pending. Baltimore & Ohio Railroad has distributed 1000 cars between the American Car & Foundry Co. and the Pressed Steel Car Co. The former will furnish 500 box cars and the latter a like number of gondolas. The Chesapeake & Ohio Railway has issued the inquiry for 2000 57½-ton gondolas, requiring about 25,000 tons of steel and the Wabash and Chicago & North Western inquiries, each for 2000 cars, will run pretty heavy in steel, although most of the cars in these inquiries are box type. Current business runs chiefly to small tonnages, but the aggregate is somewhat heavier with local mills than last week or the week before. Locally, there seems to be no shading of the regular base of 2.50c. and it is reported there has been a withdrawal of lower prices by Eastern mills. There is some shading, however, in the competitive territory between here and Chicago. Prices are given on page 1353.

Track Supplies—While some large inquiries for spikes, bolts and other rail accessories are being figured against, current business is of small proportions. The Baltimore & Ohio Railroad is reported to have placed 5000 tons of tie plates with the Wheeling Steel Corporation, but no other large orders yet have been closed with local or nearby producers. Lower prices than now are quoted are probable with the closing of the large business now up. Prices are given on page 1353.

Coke and Coal.—Coke prices are holding at the same levels that have now ruled for four weeks, but this comparative firmness is attributable to drastic curtailment of product in the Connellsville district rather than to the size of the current demand. Furnace grade holds at $3.75 to $4 per net ton at ovens, and foundry coke from $4.75 to $5.50. Curtailment of soft coal production seems merely to have brought supply and demand a little closer together and has been attended by no strengthening of prices. Mine run coal still is quoted at from $1.50 to $2 for steam and from $2 to $2.25 for coking and gas grades.

Old Material—Prices still show an upward tendency, the result, however, of short covering by dealers rather than because of any renewal of interest in supplies by melters. Neither the mills nor foundries in this district are buying, but most dealers seem to have become alarmed by the fact that recent prices were bringing out very little material and they have been seeking tonnages a little more anxiously, since yard holdings could not be drawn upon profitably to fill old orders. The belief that next month will bring the melters into the market encourages a firm stand on yard holdings. No heavy melting steel now is to be had at less than $16 and dealers are bidding up to $11.75 for machine shop turnings. Dealers' prices generally are above consumers' bids at present. Norfolk & Western Railway will take bids until noon, Nov. 14, for 15,500 gross tons of old material, the largest items in the list being 2,300,000 lb. of car axles and approximately 7,000,000 lb. of iron car wheels.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

	Per Gross Ton	
Heavy melting steel	$16.00 to	$16.50
No. 1 cast, cupola size	18.50 to	19.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va. and Franklin, Pa	18.00 to	18.50
Compressed sheet steel	14.00 to	14.50
Bundled sheets, sides and ends	12.50 to	13.00
Railroad knuckles and couplers	18.00 to	18.50
Railroad coil and leaf springs	18.00 to	18.50
Low phosphorus blooms and billet ends	20.50 to	21.00
Low phosphorus plate and other material	19.00 to	19.50
Railroad malleable	17.50 to	18.00
Steel car axles	18.50 to	19.00
Cast iron wheels	17.50 to	18.00
Rolled steel wheels	18.00 to	18.50
Machine shop turnings	11.50 to	12.00
Sheet bar crops	18.50 to	19.00
Heavy steel axle turnings	13.50 to	14.00
Short shoveling turnings	12.50 to	13.00
Heavy breakable cast	16.00 to	16.50
Stove plate	14.00 to	14.50
Cast iron borings	12.50 to	13.00
No. 1 railroad wrought	13.00 to	13.50
No. 2 railroad wrought	16.00 to	16.50

Sheet Mill Schedules Improve in the Mahoning Valley

YOUNGSTOWN, Nov. 13.—Sheet mill schedules in the Mahoning Valley show considerable improvement this week, as compared with last. Eight mills have resumed at the Niles works of the Republic Iron and Steel Co., which was entirely idle for one week. The Youngstown Sheet & Tube Co. is operating five sheet units at its Western Reserve plant, which has been inactive. The Sharon Steel Hoop Co. is operating eight instead of five sheet mills.

The Sheet and Tube company is operating five blast furnaces in this district, but has suspended for the time being its open-hearth plant at East Youngstown. Repairs are being made during the shutdown.

The company is operating four open-hearth furnaces at its Brier Hill works.

The Carnegie Steel Co. and Trumbull Steel Co. are maintaining high average operations in this territory.

Gould & Eberhardt, Newark, N. J., manufacturers of automatic gear cutting machinery and high-duty shapers, announce the appointment of the following selling agents succeeding Eccles & Smith of San Francisco, Los Angeles and Portland, who have represented them on the Pacific Coast: Harron, Rickard & McCone, 139-149 Townsend Street, San Francisco, and at 225 South San Pedro Street, Los Angeles, and Harry M. Fuller Co., 46 Front Street, Portland, Ore. The Hendrie & Bolthoff Mfg. & Supply Co., Denver, will represent Gould & Eberhardt in the territory contiguous to Denver.

The Simplex Metal Products Corporation, 152 West Forty-second Street, New York, desires to get in touch with companies equipped to make a product of sheet metal, nickel plated, similar to conductor's ticket punch. Dies will be furnished. The assembling involves springs and square tubing. Contracts will be on a basis of approximately 100,000 lots.

Chicago

Heavy Inquiry for Pig Iron—Program of Extensive Railroad Buying

CHICAGO, Nov. 13.—Prospects for railroad business are still regarded as favorable, although actual buying is slow in materializing. Reports from the meeting of the American Railway Association last week indicate that the program to be undertaken next year will be nearly as ambitious as that carried out in 1923. Whereas expenditures by the carriers this year will aggregate approximately $1,800,000,000, it is expected that nearly $1,500,000,000 will be appropriated for improvements in 1924.

Railroad car buying, which is one of the largest single sources of tonnage in steel products, has not yet made itself felt to the extent that had been hoped for. In fact, even if large car orders are now placed it will be too late to prevent sharp curtailment of operations among car builders. Three large car plants in the Chicago and St. Louis districts are expected to close Jan. 1 and another important Western car works will probably shut down the middle of December. In the event that large new orders are received, these organizations might possibly arrange their manufacturing schedules and obtain necessary materials for a resumption of activities late in January or early in February.

New business in finished steel booked by local mills continues to show some increase, reflecting pressing current needs of consumers the purchase of which can no longer be deferred. Bookings, however, still fall considerably short of shipments and shipments, in turn, are commencing to diminish. Local prices on plates, shapes and bars remain firm and unchanged, nothwithstanding a further decline in steel plant operations. The Illinois Steel Co. has blown out a furnace at Gary and contemplates the shutting down of another stack there and an additional stack at South Chicago shortly. At present its active list of blast furnaces includes 11 at Gary, eight at South Chicago and two at Joliet, or a total of 21 out of 27 steel works stacks. A number of open-hearth furnaces have likewise become idle and steel output has declined to about 85 per cent of capacity. The Inland Steel Co. continues to run at the rate of approximately 75 per cent of capacity, although its sheet bar bill has been shut down for improvements and repairs.

The most encouraging development of the week lies in the improved status of the primary materials markets. Scrap prices have stiffened and inquiries for pig iron are the heaviest in months.

Pig Iron.—Prices have given further ground, but inquiries which have developed in the past few days are the heaviest that have appeared in a long time. While it cannot be said that prices have yet stiffened under the stimulus of this prospective business, the general interest which melters are evincing in the market is interpreted as indicating their belief that present quotations are scraping bottom. The largest inquiries are for first quarter and first half and were put out by some of the largest melters in the territory. Past experience indicates that it will take just a few large purchases by the bigger interests to cause most of the smaller melters to follow suit. It is for this reason that one important seller is disinclined to take much tonnage for first half at present prices for fear of getting loaded up at those low figures. Recent sales in this market have been at varying figures, making it difficult to ascertain a ruling price. At points intermediate between Chicago and other producing centers, prices have been named which figure back to as low as $22, Chicago furnace. This price, however, cannot be regarded as representative for what is commonly regarded as Chicago territory. Locally the best figure that has been named appears to be $23 delivered in the Metropolitan switch district, or slightly less than $22.50, base furnace. The more common quotation is $23, base furnace. On some of the higher grades of iron, differentials for silicon content have been waived, but prices for the best grades do not appear to be lower than those named above. Southern iron for delivery by water and rail has also been sold at as low as $23 delivered Chicago. One of the largest purchases of the week covered 2000 tons of Southern and 1500 tons of Northern foundry for delivery to a local plant over the rest of the year. Among inquiries for first quarter and first half may be mentioned the following: 3000 to 5000 tons of malleable and foundry for a local company's plant in Wisconsin and Michigan; 2200 tons of foundry, 3800 tons of malleable and 500 tons of 8 per cent silvery for a Wisconsin automobile maker; 1500 tons of malleable and 1500 tons of foundry for a Kewanee melter; 1500 tons of foundry for a brake shoe plant; 1275 tons of foundry for a domestic appliance manufacturer; 1500 tons of foundry for a gasoline engine maker. A radiator manufacturer is inquiring for 1000 tons of foundry for a downstate plant for delivery over the remainder of the year. A Joliet melter wants 1000 tons of foundry for delivery over the next five months. Charcoal iron has declined to $25 furnace and sales of 500 tons and 800 tons respectively for shipment over the rest of the year have been made at that price. A Michigan melter has closed for 600 tons of 8 per cent silvery for the remainder of the year. An Indiana melter is inquiring for one carload of low phosphorus.

Quotations on Northern foundry high phosphorus malleable and basic irons are f.o.b. local furnace and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumer's yard or when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago..	$28.15
Northern coke, No. 1 sil. 2.25 to 2.75	$23.00 to 23.50
Northern coke, foundry, No. 2, sil. 1.75 to 2.25	22.50 to 23.00
Malleable, not over 2.25 sil.	22.50 to 23.00
Basic	22.50 to 23.00
High phosphorus	22.50 to 23.00
Southern No. 2	23.00 to 24.51
Low phos., sil. 1 to 2 per cent, copper free	33.25 to 34.00
Silvery, sil. 8 per cent	37.29

Ferroalloys.—A Michigan melter has purchased a carload of ferromanganese for early delivery at $107, f.o.b. Baltimore. A purchase of 100 tons negotiated here for coast delivery was closed at $112.50, Western seaboard. A Michigan user has bought two carloads of 10 to 11 per cent Bessemer ferrosilicon. A Milwaukee user is in the market for one car of 50 per cent ferrosilicon.

We quote 80 per cent ferromanganese, $115.38 to $117.56, delivered; 50 per cent ferrosilicon, $82, delivered; spiegeleisen, 18 to 22 per cent, $43.80, delivered.

Plates.—Large railroad car purchases are slow in materializing and in the meantime steel plant operations are being curtailed. Local prices on plates, however, remain firm. A Chicago mill has booked 1600 tons of plates for 10 oil storage tanks to be built in the Powell Field, Texas. No other tank business is reported.

The mill quotation is 2.60c., Chicago. Jobbers quote 3.30c. for plates out of stock.

Sheets.—The announcement of first quarter prices by the American Sheet & Tin Plate Co. and the local independent has had the effect of bringing out inquiries from a number of the larger buyers. While some business has been closed for first quarter delivery, the chief effect of more active inquiry has been sharper competition by the smaller mills. On galvanized, 4.90c., base Pittsburgh, is more common and as low as 4.75c. was named on one attractive inquiry. On black 3.75c., base Pittsburgh, is the usual quotation of the smaller producers, although 3.65c. has been quoted on desirable tonnages. New inquiries for 1160 tons of sheets for Japan have made their appearance in this market.

Mill quotations are 3.75c. to 3.85c. for No. 28 black, 3c. for No. 10 blue annealed and 4.90c. to 5c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote, f.o.b. Chicago, 4c. for blue annealed, 4.70c. for black and 5.85c. for galvanized.

Cast Iron Pipe.—Tulsa, Okla., which was in the market for 4000 tons of cast iron water pipe, bought steel pipe instead. Thornton, Ill., took bids yesterday on 375 tons, mainly 6- and 8-in. While there is little new busi-

ness in immediate prospect, advance information indicates that large purchases will be made next year. Prices appear to range from $47 to $48, base Birmingham, for 6-in. and larger sizes of water pipe, although some business is still moving at as high as $49. Pleasant Ridge, Mich., has divided 135 tons between the National Cast Iron Pipe Co. and James B. Clow & Sons.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $59.20 to $60.20; 6-in. and above, $55.20 to $56.20; class A and gas pipe, $5 extra.

Reinforcing Bars.—While lettings above 100 tons each are not particularly plentiful, the aggregate volume of business booked is regarded as satisfactory for this season of the year, and prices are firm at 2.75c., Chicago warehouse. In fact, an early advance in concrete bars is not an improbability.

Lettings include:

Water settling basin for the city of Kansas City, Mo., 650 tons to the Kansas City Bolt & Nut Co.

Lowenstein Department Store, Memphis, Tenn., 600 tons of rerolled bars to the LaClede Steel Co., and 100 tons of spirals to the Concrete Steel Co.

Knights of Columbus Club House, Chicago, 400 tons to Kalman Steel Co.

Crawford Avenue Station, Commonwealth Edison Co., Chicago, 160 tons to Concrete Steel Co.

Rails and Track Supplies.—The Southern Railway has placed 2200 tons of rails with a local mill. The bulk of that road's tonnage, however, was divided between Southern and Eastern producers. There is still a considerable tonnage of tie plates and other track supplies pending. The largest order booked here during the week was 1200 tons of rail joints.

Standard Bessemer and open-hearth rails, $43; light rails, rolled steel, 2.25c., f.o.b. makers' mills.

Standard railroad spikes, 3.25c. mill; track bolts with square nuts, 4.25c. mill; iron tie plates, 2.75c. mill; steel tie plates, 2.60c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.90c. base, and track bolts, 4.90c. base.

Bolts and Nuts.—The market is very weak. In fact, almost every sale is on a negotiation basis. On large machine bolts 60 and 10 and 5 off is a common quotation and proportionate discounts are quoted on other sizes and classes of bolts. On small rivets 70 off, f.o.b. Chicago, is a representative price.

Jobbers quote structural rivets, 4c.; boiler rivets, 4.20c.; machine bolts up to ⅞ x 4 in., 45 and 5 per cent off; larger sizes, 45 and 5 off; carriage bolts up to ⅞ x 6 in., 40 and 5 off; larger sizes, 40 and 5 off; hot pressed nuts, squares and hexagons, tapped, $2.50 off; blank nuts, $2.50 off; coach or lag screws, gimlet points, square heads, 50 and 5 per cent off.

Structural Material.—Approximately 20,000 tons of fabricated work is now being figured on and Western work soon to be released from architects' boards is estimated at 80,000 tons. Fabricating prices, however, have declined about $20 a ton, or an average of nearly 20 per cent, during the past few weeks. This is accounted for both by the fact that the smaller fabricators are running out of work and by the earlier deliveries available from local mills. When Chicago producers were heavily booked, fabricators frequently found it necessary to obtain a substantial portion of their requirements from warehouse or from mills east of here. The higher prices which they paid for this plain material naturally found reflection in their bids. The largest award of the week is 3100 tons for a viaduct at Omaha. Bids on the East Lake Street substation of the Commonwealth Edison Co., Chicago, involving 1500 tons, were considered too high and the plans are being altered. The most noteworthy inquiry which has come up for figures is the Union League Club building, Chicago, requiring 5000 tons. Local plain material prices are unchanged.

The mill quotation on plain material is 2.60c., Chicago. Jobbers quote 3.30c. for plain material out of warehouse.

Bars.—There continues to be an increase in scattered orders for soft steel bars, notably from automobile wheel manufacturers and bolt and nut makers. New business, however, still falls considerably short of shipments, and shipments, in turn, have diminished somewhat. Farm implement manufacturers are buying little at present. Chicago prices on mild steel bars remain firm and unchanged. Demand for bar iron is insufficient to sustain satisfactory mill operations. One important producer of iron bars is finding it difficult to run on a single turn basis and another is operating intermittently two and three days a week. Prices are held firmly at 2.40c., Chicago mill, a figure which is said to represent rock bottom cost. Business in rail steel bars is also of uncertain volume and mill operations are declining. One producer which had succeeded in maintaining double turn operations has now gone to a single turn basis. Prices are firm at 2.30c., mill.

Mill prices are: Mild steel bars, 2.50c., Chicago; common bar iron, 2.40c., Chicago; rail steel, 2.30c., Chicago mill.

Jobbers quote 3.20c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting is 4.55c. for rounds and 5.05c. for flats, squares and hexagons.

Jobbers quote hard and medium deformed steel bars at 2.75c. base; hoops, 4.55c.; bands, 3.95c.

Wire Products.—Most mills can make deliveries within 30 days, and judging by their frequent purchases the stocks of jobbers and manufacturing consumers do not cover a longer period. Being assured of good shipment, buyers see no object in contracting for any great distance ahead. Mill prices, which are unchanged, are shown on page 1352.

We quote warehouse prices f.o.b. Chicago: No. 6 to No. 9 bright basic wire, $3.90 per 100 lb.; extra for black annealed wire, 15c. per 100 lb.; common wire nails, $3.80 per 100 lb.; cement coated nails, $3.25 per keg.

Old Material.—A large local mill last week purchased approximately 20,000 tons of heavy melting at $14 delivered. This transaction has had a stiffening effect on heavy melting and allied grades and has revived speculation among some of the dealers who have paid higher than current prices for railroad offerings in the hope that the market will advance before deliveries are made. Some observers take the view, however, that no sustained upward swing in prices can be expected because of the curtailment of open-hearth operations in Chicago district plants. Railroad lists include the Wabash, 2700 tons; the Northern Pacific, 2000 tons, and the Soo Line, 500 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	$19.50 to $20.00
Cast iron car wheels	17.50 to 18.00
Relaying rails, 56 and 60 lb.	26.00 to 27.00
Relaying rails, 65 lb. and heavier	32.00 to 35.00
Rolled or forged steel car wheels	17.00 to 17.50
Railroad tires, charging box size	17.50 to 18.00
Railroad leaf springs, cut apart	18.00 to 18.50
Rails for rerolling	14.50 to 15.00
Steel rails, less than 3 ft.	16.50 to 17.00
Heavy melting steel	14.00 to 14.50
Frogs, switches and guards cut apart	14.00 to 14.50
Shoveling steel	13.50 to 14.00
Drop forge flashings	9.00 to 9.50
Hydraulic compressed sheets	11.00 to 11.50
Axle turnings	10.50 to 11.00
Steel angle bars	15.50 to 16.00
Per Net Ton	
Iron angle and splice bars	17.50 to 18.00
Iron arch bars and transoms	17.50 to 18.00
Iron car axles	23.50 to 24.00
Steel car axles	15.00 to 15.50
No. 1 busheling	10.00 to 10.50
No. 2 busheling	7.00 to 7.50
Cut forge	12.50 to 13.00
Pipes and flues	8.00 to 8.50
No. 1 railroad wrought	12.50 to 13.00
No. 2 railroad wrought	12.50 to 13.00
Steel knuckles and couplers	15.50 to 16.00
Coil springs	17.00 to 17.50
No. 1 machinery cast	18.00 to 18.50
No. 1 railroad cast	17.50 to 18.00
No. 1 agricultural cast	17.50 to 18.00
Low phos. punchings	14.00 to 14.50
Locomotive tires, smooth	15.00 to 15.50
Machine shop turnings	6.00 to 6.50
Cast borings	9.00 to 9.50
Short shoveling turnings	9.00 to 9.50
Stove plates	15.00 to 15.50
Grate bars	14.50 to 15.00
Brake shoes	15.50 to 16.00
Railroad malleable	16.50 to 17.00
Agricultural malleable	16.00 to 16.50

The C. G. Spring Co., Kalamazoo and Detroit, has announced that the business of the company in the East has been incorporated in a separate company known as the C. G. Spring & Bumper Co. of New York, with A. C. Bergmann as manager. The control of this new company is held entirely by the parent company, the C. G. Spring Co. of Delaware.

New York

Steel Activity Chiefly for Buildings—Pig Iron More Active

NEW YORK, Nov. 13.—More life has come to the pig iron market and sales are more numerous, while the inquiry has been broadening and on the whole there is a more hopeful feeling, but prices have again receded and $20 is the ruling price at Buffalo on desirable business, while $21 is the prevailing quotation on round tonnages in eastern Pennsylvania. It is true, however, that considerably higher prices have been paid on small tonnages and we note the sale of 400 tons of No. 2X at $22.50, eastern Pennsylvania furnace. The principal buyer of the past week has been the Central Foundry Co. for its numerous foundries in the East and in the South. It has purchased 10,000 tons for the first quarter of next year and is expected to contract for fully 5000 tons more for the same delivery. Other sales include 1000 tons of No. 3 foundry to a New Jersey melter and 2000 tons of No. 2 plain and No. 2X to another melter whose name has not been announced. The Thatcher Furnace Co. has bought 1000 tons of No. 2 plain and No. 2X and the Otis Elevator Co. from 4000 to 5000 tons of No. 1 foundry. The Sessions Foundry Co. is in the market for 500 to 1000 tons for the remainder of this year and the first quarter of next. An inquiry is pending for 2500 tons of ballast iron, which means any grade.

We quote delivered in the New York district as follows, having added to furnace price $2.27 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 1X fdy., sil. 2.75 to 3.25	$23.77 to $24.77
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	23.27 to 24.27
East. Pa. No. 2, sil. 1.75 to 2.25	23.27 to 24.27
Buffalo, sil. 1.75 to 2.25	24.91 to 25.91
No. 2X Virginia, sil. 2.25 to 2.75	29.94
No. 2 Virginia, sil. 1.75 to 2.25	29.44

Ferroalloys.—Demand for ferromanganese still is confined to a few carload lots for early delivery, with both British and domestic alloy filling the demand. There is no change in quotations. Demand for spiegeleisen is also from a hand-to-mouth character with sales generally made at $40, furnace. Buyers of 50 per cent ferrosilicon are few and their purchases are also confined to carload lots at prevailing quotations.

Cast-Iron Pipe.—Fairly active purchasing by private gas companies continues, although the market as a whole is slightly quieter through seasonal dullness. In many instances, where buyers are willing to accept winter delivery on pipe, makers are offering a concession of $1 to $1.50 per ton, hoping to book sufficient business to carry them through the dull season and up to the period of spring demand. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $62.10 to $63.60; 4-in. and 5-in., $67.10 to $68.60; 3-in., $77.10 to $78.60, with $5 additional for Class A and gas pipe. Some soil pipe makers, who are well-booked with low-priced tonnage, have reduced discounts by 10 points in an effort to stiffen the market. Present unfilled orders will probably carry most makers for the next 40 to 60 days. These are orders for prompt shipment and taken at the lower prices. We quote discounts of both Southern and Northern makers, f.o.b. New York, in carload lots, as follows: 6-in., 30¾ and 40¾ per cent off list; heavy, 40¾ and 50¾ per cent off list.

Warehouse Business.—Business continues fairly active. While prices of plates, shapes and bars are holding firm, sheets continue weak in spots, quotations ranging from 4.50c. per lb. base and 5.50c. per lb. base on black and galvanized for shipment to consumers in the metropolitan area up to 5c. and 6c. per lb. base to out-of-town buyers. Cold-rolled shafting has been increased 25c. per 100 lb. by warehouses in New York, bringing the price to 4.65c. per lb. base for rounds and 5.15c. per lb. for flats, squares and hexagons. New Jersey warehouses are still on the former basis of 4.40c. and 4.90c. per lb. base. Brass and copper products in two successive increases of ¼c. have been raised ½c. per lb. by warehouses in this district. We quote prices on page 1368.

Finished Iron and Steel—It is still a waiting market. The only important tonnages of steel being figured on are for building construction. The building situation continues to look promising for this time of year. Manufacturing consumers are desultory buyers, covering only for their known requirements of about 30 days. A favorable sign in the slightly increasing number of small inquiries, indicating that many consumers are running out of stock. On the heavy products, plates, shapes and bars, the price situation remains unchanged. Eastern mills quote from 2.40c. to 2.50c. on plates, but the Pittsburgh mills adhere to 2.50c. Bar mills seem to ignore occasional quotations of less than 2.40c., Pittsburgh, on concrete reinforcing material, frequently the product of rerolling mills. A disposition to give the usual consideration to certain large buyers, such as shipyards and railroad car builders, is indicated. One large producer recently took 4800 tons of plates and shapes for a shipbuilder at a price under today's market, and it is known that present estimates for freight cars are based on steel at less than 2.40c., Pittsburgh. One or two Eastern plate mills have quoted 2.35c., Pittsburgh, on desirable tonnage, though the ordinary run of current transactions are being booked at 2.40c. to 2.50c., the latter price usually applying to less than carloads. Not more than 4000 to 5000 freight cars are now being figured on by car builders, but the car builders were encouraged to expect more inquiry soon by announcements at the banquet of the American Railway Association in New York on Nov. 8 that the railroads are expecting to appropriate large sums for various betterments and maintenance in 1924.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.74c.; plates and structural shapes, 2.74c. to 2.84c.; bar iron, 2.74c.

Coke.—The market is holding fairly firm, but stiffening of prices expected to materialize from drastic curtailment of production has not appeared, reduced output evidently having been somewhat offset by reduced consumption. Standard foundry ranges from $5 to $6.25 per ton and standard furnace ranges from $3.75 to $4.25 per ton. By-product coke is quoted at $10.91, Newark and Jersey City, N. J.

Old Material.—Weakness continues in all grades with little or no activity reported in any lines but heavy melting steel, stove plate, pipe and borings and turnings. No. 1 heavy melting steel railroad grade continues at $14.50 eastern Pennsylvania. As most contracts call for either railroad grade or equivalent, it is difficult to establish a price on yard steel. Shipments of yard, however, are, when received on a contract calling for railroad, often subjected to a cut of $1 to $1.50 per ton, which would evidently establish the price at $13 to $13.50 per ton, eastern Pennsylvania. Borings and turnings are weaker, $10.50 per ton eastern Pennsylvania being about the average price now paid. Stove plate shipments are mostly confined to New Jersey foundries at about $16 per ton delivered. Specification pipe is reported going forward to consumers in Milton and Columbia at $14 per ton delivered and to Lebanon, Pa., at $13 per ton.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$10.00 to $10.50
Steel rails, short lengths, or equivalent	11.25 to 11.75
Rails for rolling	15.00 to 16.00
Relaying rails, nominal	25.00 to 26.00
Steel car axles	15.00 to 16.00
Iron car axles	22.50 to 23.00
No. 1 railroad wrought	13.00 to 13.50
Wrought iron track	13.00 to 13.50
Forge fire	8.00 to 8.50
No. 1 yard wrought, long	12.00 to 12.50
Cast borings (clean)	7.50 to 8.00
Machine-shop turnings	6.50 to 7.50
Mixed borings and turnings	6.50 to 7.50
Iron and steel pipe (1 in. diam., not under 2 ft. long)	9.75 to 10.25
Stove plate	12.50 to 13.00
Locomotive grate bars	12.00 to 12.50
Malleable cast (railroad)	14.00 to 15.00
Cast-iron car wheels	15.00 to 15.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$19.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	18.00
No. 1 heavy cast, not cupola size	14.50
No. 2 cast (radiators, cast boilers, etc.)	16.00

Buffalo

Radiator Interests Buy Round Tonnage of Pig Iron at Low Price

BUFFALO, Nov. 13.—The principal transaction of the week was the purchase of 15,000 tons for first quarter delivery for radiator plants at a shade below $20, furnace. The usual quotation on tonnages of good size is $20, while $21 is paid on small lots. The tendency of most melters to buy for early needs is still marked and this accounts for the frequency of carload lots by buyers ordinarily interested in 500 and 1000-ton lots. Lake Superior charcoal iron has weakened and sales at the furnace have been made on the basis of $25. Some of the recent sales involved in this week's total are of small lots of malleable. Foundry iron inquiries include two for 1000 tons, one for 500 tons and the rest small ones.

We quote f.o.b., gross ton, Buffalo as follows:

No. 1 foundry, sil. 2.75 to 3.25	$21.00 to $22.00
No. 2 foundry, sil. 2.25 to 2.75	20.00 to 21.00
No. 2 plain, sil. 1.75 to 2.25	20.00 to 21.00
Basic	20.50 to 21.00
Malleable	20.50 to 21.00
Lake Superior charcoal	28.28

Finished Iron and Steel.—Some improvement in inquiry is felt; prices have been asked by a number of consumers who have not been active recently. The tin plate announcement has brought out a number of orders and demand for this product, for delivery in the first half of 1924 will likely be on the same high plane as the season drawing to a close. Cold-finished material is not being sought by users. Bar, shape and plate demand is ordinary and all materials are for immediate consumption. Forge interests have been more interested in bars than any other group of users.

We quote warehouse prices Buffalo as follows: Structural shapes, 3.65c.; plates, 3.65c.; soft steel bars, 3.55c.; hoops, 4.65c.; bands, 4.35c.; blue annealed sheets, No. 10 gage, 4.45c.; galvanized steel sheets, No. 28 gage, 6.35c.; black sheets, No. 28 gage, 5.25c.; cold rolled round shafting, 4.70c.

Old Material.—Small sales of borings have been made to blast furnace consumers but not in sufficient quantity to indicate any awakening of interest. Two mills which have large quantities of heavy melting steel contracted for have suspended shipments and generally the market is without life.

We quote f.o.b., gross ton, Buffalo as follows:

Heavy melting steel	$14.50 to $15.50
Low phos., 0.04 and under	21.00 to 22.00
No. 1 railroad wrought	14.00 to 15.00
Car wheels	16.50 to 17.00
Machine shop turnings	8.50 to 9.50
Cast iron borings	13.00 to 13.50
No. 1 busheling	14.50 to 15.00
Stove plate	17.00 to 17.50
Grate bars	16.00 to 16.50
Bundled sheet stampings	8.00 to 9.00
No. 1 machinery cast	19.50 to 20.50
Hydraulic compressed	14.50 to 15.50
Railroad malleable	18.50 to 19.00

Birmingham

Pig Iron Sales Are Confined to Small Lots at Low Prices

BIRMINGHAM, ALA., Nov. 13.—Small lot orders dominate the Southern pig iron market and they are so numerous that no iron is going to the yards as surplus stock. The quotations are uncertain, hovering around $20 per ton for local delivery and $19 for distant points and differentials being ignored. Indications are that curtailing production in the Birmingham district is not now necessary. Occasionally orders for 500 to 1000 tons are coming in. Foundries and other melters are buying in the hand to mouth manner as they have for several weeks in the hope of seeing further reductions in prices or to avoid having any iron on hand at the end of the year. Expectations are at a high pitch that the pressure pipe makers will place some business with the furnace interests in Alabama shortly, their prospects for the winter being good despite the fact that lettings have been slow for several weeks.

We quote per gross ton f.o.b. Birmingham district furnace as follows:

Foundry, silicon 1.75 to 2.25	$19.50 to $21.00
Basic	20.00 to 21.00
Charcoal, warm blast	33.00

Finished Material.—The steel market in Alabama is showing improvement as new business for immediate attention and contracts for delivery next year come in. The Gulf States Steel Co. is shipping shapes, wire and nails for Brazil and Argentine. The Tennessee Coal, Iron & Railroad Co. and the American Steel & Wire Co. is shipping to the Orient and elsewhere steadily. The Southern Railway has placed an order for 40,700 tons of 100 lb. rails with the Tennessee company, delivery next year and the Missouri, Kansas & Texas, 8750 tons. The railroads have allocated a considerable proportion of their business already to the Birmingham district and the indications are that there will be steady operation of the rail mill. The Bessemer rolling mill operation has been down but this curtailment of production is temporary. The steel fabricating plants of the district are busy. The Southern Steel & Rolling Mills Co., with a daily production of 30 tons of special concrete bars, is producing steadily, using old rails exclusively as material. This company furnished the concrete bars for the warehouse being erected by the Phoenix Portland Cement Co. at this point. The Atlas Portland Cement Co., with a plant in this district working day and night, has announced a reduction of 25c. on the barrel for cement. All of the cement plants of the district are working steadily, the production being around 90 per cent of capacity. Steel bars are quoted at 2.60c.

Coke.—The coke market in Alabama is weaker, though small lot sales are taking up the make. Quotations are lower this week, by-product coke being possible at $5 to $5.50, for the foundry grades. Bee-hive coke is commanding a little better price. No big contracts are being reported though inquiries are in almost every day.

Old Material.—There is no change in the scrap iron and steel market in the South, with very little demand. No. 1 cast has had a little inquiry lately. Heavy melting steel is without inquiry or purchase. The quotations are uncertain. Those buying are practically naming their own prices. Dealers are replacing all stock sold, indicating that they look for some improvement in the trade in the near future.

We quote per gross ton f.o.b. Birmingham district yards, nominal prices, as follows:

Cast iron borings, chemical	$18.00 to $19.00
Heavy melting steel	14.00 to 15.00
Railroad wrought	15.00 to 16.00
Steel axles	19.00 to 20.00
Iron axles	23.00 to 24.00
Old steel rails	16.00 to 17.00
No. 1 cast	19.00 to 20.00
Tram car wheels	18.00 to 19.00
Car wheels	17.00 to 18.00
Stove plate	16.00 to 17.00
Machine shop turnings	8.00 to 9.00
Cast iron borings	9.00 to 10.00

Detroit Scrap Market

DETROIT, Nov. 13.—The market on waste materials is very soft, with producers anticipating accumulations this month, due to proximity of the inventory period. Small tonnages are being moved on the basis of prices quoted the past two weeks.

The following prices are quoted on a gross ton basis, f.o.b. cars producers' yards, excepting stove plate, automobile cast and No. 1 machinery cast, which are quoted on a net ton basis:

Heavy melting steel	$11.50 to $12.50
Shoveling steel	11.50 to 12.50
No. 1 machinery cast	16.00 to 17.00
Cast borings	8.50 to 9.35
Automobile cast scrap	22.00 to 23.00
Stove plate	15.00 to 16.00
Hydraulic compressed	9.50 to 10.50
Short turnings	8.75 to 9.25
Long turnings	7.00 to 7.85
Flashings	8.25 to 9.35

Philadelphia

Pig Iron Continues Weak, Though Demand Is Better—Scrap Slightly Firmer

PHILADELPHIA, Nov. 13.—The first sign of a recovery in prices of raw materials, which have been declining steadily for some time, came within the past few days in the slight advance of a few grades of scrap. No. 1 heavy melting steel is stronger in that dealers and brokers now are unwilling to sell below $15.50, delivered, though such material has been freely obtainable in recent weeks at not over $15. An advance of fully $1 on turnings is due to more active buying by two Eastern steel companies. In pig iron there is a little firmer attitude on the part of furnaces and much more interest on the part of large consumers, many of whom doubtless believe that current prices are favorable for purchase of first quarter requirements. It is expected that fully 20,000 tons of foundry iron will be bought by Eastern melters within a week. One important Eastern furnace has declined to sell for first quarter at the prices it has recently quoted on early shipments.

The steel market continues to be marked by the absence of any distinct trend. Buyers are continuing the policy of cautious buying and this is likely to be in evidence, it is believed here, until the inventory period has been passed. Prices on all steel products are unchanged, due to the somewhat determined attitude of the larger producers and also to the lack of attractive tonnage.

Pig Iron.—Considerably more inquiry for foundry iron than has been quoted on within one week is now before the Eastern pig iron trade, and it is confidently expected that some of the larger buyers in the East, including New England, may close for a total of 20,000 tons within the next week. The largest inquiry is from the J. L. Mott Iron Works, Trenton, N. J., which asks prices on 3000 tons for delivery in December and the first quarter. There are other inquiries, including a number of 1000 tons each, and some business is being quietly negotiated that has not come out as formal inquiry. On business in New England and the New York territory, where eastern Pennsylvania furnaces come into close competition with Buffalo, there have been quotations of $21, furnace, but it has not been necessary for eastern Pennsylvania furnaces to go this low on iron for nearby delivery. Most of the furnaces will quote $22, furnace, on carload lots for either No. 2 plain or No. 2X, and concessions from this level may be expected on some of the large business pending. However, one Eastern producer declines to quote for first quarter, while another is, for the present at least, adhering to a minimum of $23, furnace. The United States Cast Iron Pipe Co. has bought about 3000 tons of foundry iron for its New Jersey plant.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76 cents to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$22.64 to $24.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	22.64 to 24.63
East. Pa. No. 1X	23.76 to 25.13
Virginia No. 2 plain, 1.75 to 2.25 sil.	29.17 to 30.17
Virginia No. 2X, 2.25 to 2.75 sil.	30.17 to 30.67
Basic delivered eastern Pa.	23.00 to 24.00
Gray forge	23.00 to 24.00
Malleable	23.00 to 24.00
Standard low phos. (f.o.b. furnace)	28.00 to 30.00
Copper bearing low phos. (f.o.b. furnace)	28.00

Ferroalloys.—Domestic furnaces and British importers continue to quote $110, furnace or seaboard, on ferromanganese, but resale lots are still being sold at $108.50 and $109. Spiegeleisen is scarcely a factor.

Semi-Finished Steel.—Though Eastern mills quote $40 on rerolling billets and $45 on forging billets, Pittsburgh, they have lost business at this level.

Plates.—No improvement in the demand for plates has come within the past week. The price situation is unchanged. On carload lots or larger 2.40c., Pittsburgh, is easily obtainable, while on less than carloads, 2.50c., Pittsburgh, is the ruling quotation. One producer is holding out for 2.50c. even on carload lots.

Structural Material.—The demand for structural shapes is confined to a fair number of small jobs. Even those mills which are quoting 2.40c., Pittsburgh, are unable to get enough business to maintain a good rate of operation. The larger mills continue to quote 2.50c.

Bars.—Mill prices on steel bars are 2.40c., Pittsburgh. Rerolled bars are being offered at about 2.30c., Pittsburgh. There is very little business. Bar iron makers quote 2.35c., Pittsburgh.

Sheets.—No stabilization of sheet prices has followed the recent announcement of the American Sheet & Tin Plate Co. that its present quotations will be continued for first quarter. Some of the mills are shading these so-called "regular" prices at least $2 a ton, this also applying now to blue annealed, which until recently has been scarcely affected by the cuts on galvanized and black.

Warehouse Business.—A fair demand for steel out of stock is reported by local jobbers. The week has brought no price changes. For local delivery the following quotations rule:

Soft steel bars and small shapes, 3.47c.; iron bars (except bands), 3.47c.; round edge iron, 3.75c.; round edge steel, iron finished, 1½ x ½ in., 3.75c.; round edge steel planished, 4.55c.; tank steel plates, ¼ in. and heavier, 3.57c.; tank steel plates, ⅜ in., 3.82c.; blue annealed steel sheets, No. 10 gage, 4.10c.; black sheets, No. 28 gage, 5.15c.; galvanized sheets, No. 28 gage, 6.25c.; square twisted and deformed steel bars, 3.57c.; structural shapes, 3.57c.; diamond pattern plates, ¼-in., 5.40c.; ⅜-in., 5.60c.; spring steel, 5c.; round cold-rolled steel, 4.35c.; squares and hexagons, cold-rolled steel, 4.85c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 4.27c.; narrower than 1 in., all gages, 4.77c.; steel bands, No. 12 gage to ⅜-in., inclusive, 4.27c.; rails, 3.47c.; tool steel, 8.50c.; Norway iron, 7c.

Old Material.—Two Eastern steel companies came into the market late last week for machine shop turnings for open hearth use and were obliged to pay $12, delivered, a rise of $1 over previous transactions. Pipe has also gone up 50c. a ton on more active buying. While there has been no important buying of No. 1 heavy melting steel, dealers and brokers are firmer in their views and are not inclined to sell at less than $15.50, whereas recent sales have not been above $15.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$15.00 to $15.50
Scrap rails	15.00 to 15.50
Steel rails for rolling	17.00 to 17.50
No. 1 low phos., heavy 0.04 and under	20.00 to 21.00
Couplers and knuckles	17.50 to 18.00
Cast-iron car wheels	17.50 to 18.50
Rolled steel wheels	17.50 to 18.00
No. 1 railroad wrought	17.00 to 17.50
No. 1 yard wrought	15.50 to 16.00
No. 1 forge fire	12.00 to 12.50
Bundled sheets (for steel works)	12.00 to 12.50
Mixed borings and turnings (for blast furnace use)	10.50 to 11.00
Machine shop turnings (for steel works use)	12.00 to 12.50
Machine shop turnings (for rolling mill use)	12.50 to 13.00
Heavy axle turnings (or equivalent)	13.00 to 13.50
Cast borings (for steel works and rolling mills)	11.50 to 12.00
Cast borings (for chemical plants)	15.00 to 16.00
No. 1 cast	19.00 to 19.50
Heavy breakable cast (for steel plants)	16.00 to 16.50
Railroad grate bars	16.00 to 16.50
Stove plate (for steel plant use)	16.00 to 16.50
Railroad malleable	17.00 to 17.50
Wrought iron and soft steel pipes and tubes (new specifications)	14.50 to 15.00
Shafting	20.00 to 21.00
Steel axles	18.50 to 19.50

Net profits for the first eight months of the year of the Penn Seaboard Steel Corporation totaled $258,066. Current assets are $2,511,891 and liabilities $1,568,892. About 90 per cent of holders of the company's 7 per cent notes, due Feb. 1, 1924, have assented to the plan for refunding.

St. Louis

Pig Iron Sales and Inquiries Increase but Prices Remain Weak

ST. LOUIS, Nov. 13.—More inquiries and sales of pig iron were reported during the last week than for several weeks, but they were not large enough to lend any strength to the market, and prices still are weak. There is no market price for either Northern or Southern pig iron, each inquiry being considered as a separate transaction and closed after more or less dickering. Sales of Southern iron have been reported as low as $18.50, Birmingham, and Northern iron at $22, Chicago, although $20, Birmingham, and $23, Chicago, are quoted generally. The principal sale of the week was of 1000 tons of Southern iron to a local foundry. The St. Louis Coke & Iron Co. sold 600 tons of foundry iron to a local concern, and a Kansas City melter bought 700 tons of foundry iron from a Chicago maker. A St. Louis melter wants 300 tons each of Northern and Southern foundry iron for first quarter delivery. A St. Louis manufacturer wants 500 tons and another St. Louis melter is in the market for 200 tons of foundry iron. An East Side melter bought a carload of 12 per cent Bessemer ferrosilicon and there is an inquiry for a car of spiegeleisen.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $3.28 from Birmingham (rail and water), $5.17 from Birmingham, all rail, and 81 cents average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$24.16 to $25.16
Northern malleable, sil. 1.75 to 2.25	24.16 to 25.16
Basic	24.16 to 25.16
Southern fdy., sil. 1.75 to 2.25 (rail)	23.17 to 24.17

Finished Iron and Steel.—Conditions remain unchanged in these lines. Warehouses are doing very little business, and consequently are buying only small lots to fill in. Manufacturers are buying only such raw material as can be converted into the finished product before the first of the year, and these purchases are negligible. No railroad inquiries of size have been issued in several weeks.

Coke.—The St. Louis Coke & Iron Co. reports the sale of 10,000 tons of by-product coke for shipment throughout the year to a Western smelter. The demand for foundry coke is light. An advance of 25c. a ton is reported on Connellsville coke, with prices ranging from $6 to $7.50, f.o.b. ovens, according to the brand. Domestic coke is moving very slowly. Dealers are well stocked, and consumers are not buying because the weather has been warm.

Old Material.—Prices of old material are higher on some grades, but this is due to the fact that dealers are short on such items and are paying more money for them to deliver against contracts. It is a dealers' market, consumers showing very little interest in anything. It was thought that there would be a let-up in railroad lists, but more of them were received during the week, as follows: Texas & Pacific, 5000 tons; Southern Railway, 4300 tons; Northern Pacific, 2700 tons, and Chicago & Alton, 600 tons.

	Per Gross Ton	
Iron rails	$15.00 to	$15.50
Rails for rolling	14.00 to	14.50
Steel rails, less than 3 ft.	16.50 to	17.00
Relaying rails, 60 lb. and under	25.00 to	26.00
Relaying rails, 70 lb. and over	32.50 to	33.50
Cast iron car wheels	17.00 to	17.50
Heavy melting steel	13.00 to	13.50
Heavy shoveling steel	12.50 to	13.00
Frogs, switches and guards cut apart	13.50 to	14.00
Per Net Ton		
Heavy axles and tire turnings	11.00 to	11.50
Steel angle bars	12.25 to	12.75
Steel car axles	15.00 to	15.50
Iron car axles	22.50 to	23.00
Wrought iron bars and transoms	17.00 to	17.50
No. 1 railroad wrought	12.50 to	13.00
No. 2 railroad wrought	11.50 to	12.00
Railroad springs	14.50 to	15.00
Cast iron borings	9.00 to	9.50
No. 1 busheling	12.25 to	12.75
No. 1 railroad cast	17.00 to	17.50
No. 1 machinery cast	17.00 to	17.50
Railroad malleable	14.50 to	15.00
Machine shop turnings	9.00 to	9.50
Champion bundled sheets	7.00 to	7.50

Cincinnati

More Activity in Pig Iron with Prices Lower —Some Shading of Sheet Prices

CINCINNATI, Nov. 13.—The pig iron market is showing a little more activity, especially in Northern grades and some sales for first quarter were made last week. These included one for 1000 tons of foundry, another for 500 tons and a number for 200 to 300 tons. The furnace booking this business reports a total of 5000 tons for the week. Prices are slightly lower than the previous week, $22.50 being a common quotation for Southern Ohio iron with reports current that in competitive territory $22 has been done. On Southern iron there is little activity, though we note a sale of approximately 1000 tons for shipment this year at around $19, Birmingham, base. Other sales of Southern iron are carload lots. While the open quotation is $19.50, Birmingham, it is freely admitted that on attractive orders $19 can be done and reports are current of one interest quoting $18.50, but this latter cannot be confirmed. Some sales of silvery were reported at the schedule, but little activity is noted in basic or Bessemer irons. Inquiries include two for 2000 tons each for first half, but a disposition is apparent on the part of producers to quote only for first quarter. Etna furnace of Marting Iron & Steel Co. was banked last week. Norton furnace resumed on Bessemer and Belfont is scheduled to blow this week. Jisco silvery furnace is about ready to resume after having been relined.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	$23.05
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	23.55
Ohio silvery, 8 per cent	34.77
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	24.27
Basic Northern	24.27
Malleable	24.27

Reinforcing Bars—Three projects in Cincinnati, in which large tonnages of reinforcing bars would have been required, were voted down at the election held Tuesday. There are, however, a number of projects up for bids. An office building for the Southern Railway at Birmingham, Ala., will take 800 tons. The Third National Bank Building, Dayton, Ohio, bids for which close Nov. 20, will require about 600 tons. A hotel at Louisville, Ky., on which bids will shortly be taken, will require approximately 1200 tons, according to estimates. Numerous other projects, not ready for bids, but which will likely come out before Jan. 1, will take a large aggregate tonnage. Prices of reinforcing bars are as last quoted, the range being 2.20c. to 2.40c., mill.

Structural Material—The L. & N. Railroad has awarded 800 tons additional bridge approach work to the American Bridge Co., or 500 tons more than recently reported. A Masonic Temple at Portsmouth, Ohio, will take 800 tons, and bids are being asked for this work. The Third National Bank Building, Dayton, Ohio, calls for 1050 tons. Gas-holder manufacturers report having received contracts for approximately 2700 tons of work. Contemplated projects include an addition to the Bourne-Fuller Co. warehouse at Cincinnati, tonnage not estimated.

Warehouse Business—Bars and small angles are moving fairly well, but other lines are quiet. Prices have not undergone any changes, with the exception of sheets, since April, and at this time, none is contemplated.

Cincinnati jobbers quote: Iron and steel bars, 3.50c.; reinforcing bars, 3.60c.; hoops, 4.55c.; bands, 4.25c.; shapes, 3.60c.; plates, 3.60c.; cold-rolled rounds, 4.50c.; cold rolled flats, squares and hexagons, 5c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, 4.80c.; No. 28 galvanized sheets, 5.85c.; No. 9 annealed wire, $3.60 per 100 lb.; common wire nails, $3.60 per keg base; cement coated nails, $3.30 per keg.

Finished Materials—There has been fair inquiry for plates during the past week, and same railroad business was booked. A number of tank builders were in the market for fair-sized tonnages, and reports are persistent that a price of 2.40c. has been made on several deals. This, however, cannot be confirmed.

Bar orders are scarce, though on cold finished materials the reduction in price of $5 per ton is reported to have brought out some business. The L. & N. Railroad has placed orders for 3000 kegs of track spikes, in addition to 15,000 kegs placed two weeks ago. Light rails are not in brisk demand, though some orders are being placed. Wire products are moving slowly, and while some companies are willing to make the Ironton rate on nails to this district, most of the larger ones are holding to the $3 base, with rail freight from Pittsburgh added.

Sheets and Tin Plate—First quarter contracts are in good volume, and there is no indication of prices other than the regular schedule being quoted for this delivery. On business for the rest of this year, black and galvanized sheets are being shaded $2 per ton, and reports are current that on blue annealed sheets 2.75c. has been quoted, but this lacks confirmation.

Coke—There is little activity in coke and prices remain as last quoted. Connellsville furnace is $3.75 to $4 and foundry $5 to $6. New River foundry is quoted at $10 to $11 and Wise County foundry $6 to $7. By-product producers are maintaining the $9 Connellsville basis.

Old Material—The scrap market continues inactive, as far as sales to consumers are concerned. Offerings are heavy, the Norfolk & Western list being for 20,000 tons and the Southern list a like amount. Some mills are holding up shipments on contracts.

We quote dealers' buying prices, f.o.b. cars Cincinnati:

Per Gross Ton	
Bundled sheets	$9.50 to $10.00
Iron rails	13.00 to 13.50
Relaying rails, 50 lb. and up	27.00 to 27.50
Rails for rolling	13.00 to 13.50
Heavy melting steel	12.00 to 12.50
Steel rails for melting	12.50 to 13.00
Car wheels	12.50 to 13.00
Per Net Ton	
No. 1 railroad wrought	11.00 to 11.50
Cast borings	7.50 to 8.00
Steel turnings	7.00 to 7.50
Railroad cast	13.50 to 14.00
No. 1 machinery cast	16.50 to 17.00
Burnt scrap	10.50 to 11.00
Iron axles	20.50 to 21.00
Locomotive tires (smooth inside)	12.50 to 13.00
Pipes and flues	6.50 to 8.00

Boston

Active but Quiet Buying of Pig Iron at Concessions for First Quarter Delivery

BOSTON, Nov. 13.—Because transactions are more or less of a private nature, the pig iron market on the surface is quiet. An unusually large number of foundries have been induced through the medium of price concessions to take on iron for December and first quarter 1924 delivery. Individual orders are in less than four figures, but in the aggregate several thousand tons. The market, therefore, actually is more active than in many weeks, with first quarter buying an outstanding feature. Eastern Pennsylvania iron in 100-ton and larger lots sold the past week at $22 furnace base, with and without differentials; Buffalo No. 2 plain, No. 2X and No. 1X at $21 and $21.50 furnace, and central Pennsylvania at $21 furnace base, with differentials, all for remainder of 1923 and first quarter 1924 delivery. Small amounts of Virginia sold as high as $26 furnace base with differentials, entirely out of line with other iron quotations. The market for Alabama iron is largely nominal. Lake charcoal iron is off $2 at $25 a ton furnace base. A lot of 100 ton Burn, silicon 2.75 to 3.25, iron arrived at this port last week, the first Indian iron shipped direct to Boston. A larger lot is expected to shortly arrive at Bridgeport, Conn.

We quote delivered prices on the basis of the latest reported sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia, and $9.60 from Alabama:

East. Penn., sil. 2.25 to 2.75	$25.65 to $26.75
East. Penn, sil. 1.75 to 2.25	25.65 to 26.15
Buffalo, sil. 2.25 to 2.75	25.91 to 26.41
Buffalo, sil. 1.75 to 2.25	25.91 to 26.41
Virginia, sil. 2.25 to 2.75	30.42 to 32.42
Virginia, sil. 1.75 to 2.25	29.92 to 31.92
Alabama, sil. 2.25 to 2.75	29.60 to 31.10
Alabama, sil. 1.75 to 2.25	29.10 to 30.60

Cast Iron Pipe.—The Warren Foundry & Pipe Co. was the low bidder on 1200 to 1500 tons of 12-in. and 16-in. pipe bought by the city of Boston for its high pressure fire service, delivery second quarter 1924. Bids closed Nov. 14 on 3000 tons 6-in. to 16-in., inclusive, pipe also required by Boston, second quarter 1924 delivery. One of the largest New England gas companies has just closed on its estimated 1924 requirements, several thousands of tons of pipe being involved. Bids close Nov. 16 on several hundred tons of 4 in. to 12 in. pipe required by Fall River, Mass., in 1924. Municipalities are coming into the market for next year's pipe requirements much earlier than usual. Prices are not as strong as they were two or three months ago, due to a weakening in raw material and labor costs at pipe foundry districts, but actual concessions, if any, are slight.

Finished Iron and Steel.—Purchases of finished iron and steel continue for immediate requirements only, consequently the market is far from active. The market for bars is steady and unchanged, but on other products is soft, with the tendency to shade prices. On structural steel, most passing business is done on a 2.40c. Pittsburgh base. Stone & Webster, Boston, shortly will call for bids for steel required on a Fall River, Mass., power plant, some 3500 tons being involved. Next month bids will close on steel required for a bridge at Haverhill, Mass.

Soft steel bars, $3.51½ at 100 lb. base; flats, $4.40; regular concrete bars, $3.76½; deformed bars, stock lengths, $3.76½ to $3.89; structural steel, $3.61½; tire steel, $4.80 to $5.15; open-hearth spring steel, $6.50 to $10; crucible spring steel, $12; regular steel bands, $4.31½; bands over 6 in. wide, $5.05 to $5.30; hoop steel, $5.80 to $6.30; cold rolled steel, $4.35 to $4.85; refined iron, $3.51½; best refined, $4.75; Wayne iron, $5.50; Norway iron, $6.60 to $7.10.

Coke.—Virtually all New England foundries have covered on their first half 1924 by-product foundry coke requirements, on a basis of price ruling date of shipment. Buying for current needs is remarkably good for this time of the year, with the New England Coal & Coke Co. and the Providence Gas Co. quoting $12.50 delivered in New England. That price figures back to $6.95 on cars at Connellsville. The market for domestic coke is easier, due to continued heavy production by by-product ovens and gas makers, and to continued mild weather, making for restricted consumption. Whether the softness of domestic coke prices will have any influence on those for foundry coke next month is problematical, however.

Old Material.—Better prices in other sections of the country are reflected to some degree in this market, but values are still too low and freights too high to permit any large movement of material out of New England. An improvement, however, is reported in the movement of mixed borings and turnings, usually at $7 on cars shipping point, and chemical borings at $9.50 to $10, the latter representing an advance of about 50c. No market for yard wrought apparently exists, but interest in No. 1 railroad wrought is increasing. A small amount of heavy melting steel business was put through the past week at $10 and $10.50 on cars, but the best most dealers can do is $9.50, which price fails to attract sellers. Car lots of textile machinery cast at $22.75 delivered New England foundry are included in the week's transactions, as well as similar tonnages of No. 1 machinery cast at $22 and $22.50. No. 2 machinery cast is a drug on the market.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$22.00 to $22.75
No. 2 machinery cast	20.00 to 20.50
Stove plate	16.00 to 16.50
Railroad malleable	19.00 to 20.00

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$9.50 to $10.50
No. 1 railroad wrought	13.00 to 13.50
No. 1 yard wrought	11.00 to 11.50
Wrought pipe (1-in. in diam., over 2 ft. long)	9.00 to 9.50
Machine shop turnings	7.00 to 7.50
Cast iron borings, rolling mill	7.50 to 8.00
Cast iron borings, chemical	9.50 to 10.00
Blast furnace borings and turnings	6.75 to 7.25
Forged scrap and bundled skeleton	8.50 to 9.00
Street car axles	13.50 to 14.00
Street car wheels	11.00 to 12.50
Rails for rerolling	11.50 to 12.00

Cleveland

More Inquiry for Foundry and Malleable Pig Iron—Scrap Marked Up

CLEVELAND, Nov. 12.—With good railroad transportation facilities for moving iron ore to the interior furnaces, a smaller percentage of ore has been placed on Lake Erie docks this year than usual. The amount on docks Nov. 1 was 8,097,488 gross tons as compared with 9,586,234 tons on Nov. 1 last year and with 7,019,518 tons Oct. 1. Receipts at Lake Erie ports during October were 6,120,669 tons as compared with 4,632,542 tons during October last year. Receipts at Lake Erie ports for the season until Nov. 1 were 39,697,744 tons as compared with 28,542,052 tons during the corresponding period last year. Shipments from Lake Erie docks up to Oct. 1 were 30,393,069 tons as compared with 19,032,476 tons up to Oct. 1, 1922.

Pig Iron.—Considerable inquiry has developed during the past few days for foundry and malleable iron for the first quarter and there has been some increase in demand for these grades for early shipment. Pending inquiries from Cleveland and the northern Ohio territory aggregate close to 15,000 tons ranging from 500 ton lots to one for 4000 tons. A few inquiries have also come out for the first half, but producers are not inclined to quote beyond the first quarter. So far few of the first quarter inquiries have resulted in sales. These inquiries seem to indicate that many consumers feel that prices have about touched bottom and sellers are looking for a moderate volume of buying. About a month ago, considerable first quarter inquiry came out, but at that time prices further declined as a result of the weakness in the Buffalo market and buying was postponed. Early shipment sales which improved during the week were mostly in small lots, although some fair-sized orders were placed in the Michigan, Indiana and western Ohio territories, considerable of this business coming from stove manufacturers. The lake furnace and Valley price situation still seems to be dominated by the Buffalo market and under this influence prices have further declined 50c. a ton. Foundry and malleable iron are now commonly quoted at $22 by lake and Valley furnaces, although small lot sales are reported in the Valley district at $22.50. For Cleveland delivery the price quoted by local furnaces is unchanged at $23 at furnace. Buffalo iron is quoted at $21 and there are reports that this price has been named by one Valley producer. Buffalo furnaces are making little effort to sell iron in Cleveland territory, as local producers would probably go below any prices that might be named in Buffalo. Steel making iron is inactive. We note the sale of 150 tons of Alabama foundry iron at $19, although some producers are asking $20. Carload sales of low phosphorus iron are reported at $30 but a good inquiry would probably bring out a lower price.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace	$22.00
Northern No. 2 fdy., sil. 1.75 to 2.25	23.50
Southern fdy., sil. 1.75 to 2.25	$25.00 to 25.50
Malleable	23.50
Ohio silvery, 8 per cent	35.52
Standard low phos., Valley furnace	30.00

Bolts, Nuts and Rivets.—The bolt and nut market is quiet and weak. Some manufacturers are attempting to stimulate buying by making price concessions. However, those having contracts at regular prices are getting specifications against their contracts. Leading manufacturers are operating their plants at about 75 per cent of the capacity. Some rivet makers are also naming low prices, quotations at 2.70c. and lower having appeared. New demand is light.

Semi-Finished Steel.—There is no demand for sheet bars and specifications for these are coming out slowly owing to the curtailment in sheet production. Makers are holding firmly to $42.50 for sheet bars. A local inquiry for forging billets is reported to have brought out a price of $45, delivered.

Finished Iron and Steel.—The demand improved somewhat during the week and while buying is still only for early requirements, the size of orders has increased. In steel bars, some orders are now coming out for one to two carloads and in many cases buyers are asking for deliveries in two or three weeks. The market is firm at 2.40c. Plates are moving slowly, are not firm, and quotations of 2.40c. have appeared in this territory, although small lot sales are being made at 2.50c. Some new demand has come from the railroads. The Ann Arbor Railroad is inquiring for 3000 tons of rails and another rail inquiry is for 500 tons. Following recent rail buying, fair demand has sprung up for track material. The Wheeling & Lake Erie has placed car repair work with the Canton Car Co., requiring 1000 tons more of steel, mostly plates. Another inquiry has come out for a lake boat, making four live inquiries for large vessels that are now pending with lake shipyards. There is a lull in new inquiry in the building field although there is considerable work on which bids have been taken pending. Hot-rolled strip steel continues weak, with 2.75c. freely quoted for wide strip. Bands, except in very narrow widths and narrow hot-rolled strip, are quoted at 3c.

Sheets.—The sheet market continues weak. Black sheets are particularly soft and on these 3.75c. is being shaded. On galvanized sheets 4.75c. has appeared. Some of the mills are offering surplus stocks at low prices. On these, 3.25c. has been quoted on black and 2.75c. on blue annealed sheets. The demand for automobile body sheets is holding up well, but car builders have not yet come into the market for the first quarter.

Alloy Steel.—There has been some good volume demand recently from the automotive industry and mills are comfortably filled with orders, one Ohio maker being on a 100 per cent production. Two pending local inquiries aggregate 2200 tons. Prices are firm.

Reinforcing Bars.—There is a fair demand for reinforcing bars in small lots, much of this being for highway bridge work. The only sizable inquiry is for 350 tons for a county bridge in Fremont, Ohio. The 2000 tons for the Baldwin Reservoir, Cleveland, will probably go to a Youngstown mill, but this steel will not be required until spring.

Warehouse Business.—Jobbers report some improvement in the demand for sheets on which there are still irregularities in warehouse prices. One jobber has reduced cold-rolled strip $3 a ton.

Jobbers quote steel bars, 3.36c.; plates and structural shapes, 3.46c.; No. 28 black sheets, 4.40c. to 4.65c.; No. 28 galvanized sheets, 5.60c. to 5.80c.; No. 10 blue annealed sheets, 3.60c. to 4.06c.; cold rolled rounds, 3.90c.; flats, squares and hexagons, 4.40c.; hoops and bands, 1 in. and wider and 20 gage or heavier, 4.16c.; narrower than 1 in. or lighter than No. 20 gage, 4.66c.; No. 9 annealed wire, $3.50 per 100 lb.; No. 9 galvanized wire, $3.95 per 100 lb.; common wire nails, $3.60 base per 100 lb.

Coke.—The foundry coke market is slow with prices unchanged at $5 to $6.50 for standard Connellsville foundry coke. Wise County producers are renewing first quarter contracts for foundry coke at $7.

Old Material.—Sentiment in the scrap trade has improved and prices have advanced about 50c. a ton on most grades and this in spite of no improvement in the demand. In the Valley district, heavy melting steel has advanced 50c. to $16 and as high as $16.50 has been paid by a dealer for Warren delivery to fill an order that according to unconfirmed reports was placed at $17. Borings and turnings have advanced 75c. and the latter have sold locally at $10.75.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$14.25 to $14.75
Rails for rolling	16.25 to 16.75
Rails under 3 ft	16.25 to 16.75
Low phosphorus melting	17.00 to 17.50
Cast borings	10.75 to 11.00
Machine shop turnings	10.25 to 10.50
Mixed borings and short turnings	10.50 to 10.75
Compressed sheet steel	12.00 to 12.50
Railroad wrought	12.50 to 12.75
Railroad malleable	19.00 to 19.25
Light bundled sheet stampings	9.00 to 9.25
Steel axle turnings	11.50 to 11.75
No. 1 cast	20.00 to 21.00
No. 1 busheling	9.25 to 9.50
Drop forge flashings	9.50 to 9.75
Railroad grate bars	15.50 to 16.00
Stove plate	15.50 to 16.00
Pipes and flues	9.00 to 9.50

Prices Finished Iron and Steel f.o.b. Pittsburgh

Carload Lots

Plates

Sheared, tank quality, base, per lb.....2.50c.

Structural Materials

Beams, channels, etc., base, per lb.....2.50c.
Sheet piling .....2.65c.

Iron and Steel Bars

Soft steel bars, base, per lb.....2.40c.
Soft steel bars for cold finishing.....$3 per ton over base
Reinforcing steel bars, base.....2.40c.
Refined iron bars, base, per lb.....3.10c. to 3.15c.
Double refined iron bars, base, per lb.....4.75c.
Stay bolt iron bars, base, per lb.....7.75c. to 8c.

Hot-Rolled Flats

Hoops, base, per lb.....3.15c.
Bands, base, per lb.....3c. to 3.15c.
Strips, base, per lb.....3c. to 3.15c.
Cotton ties, per bundle of 45 lb.....$1.63

Cold-Finished Steels

Bars and shafting, base, per lb.....3c.
Bars, S. A. E. Series, No. 2100.....4.25c. to 4.50c.
Bars, S. A. E. Series, No. 2300.....6.75c. to 7.00c.
Bars, S. A. E. Series, No. 3100.....5.75c. to 6.00c.
Strips, base, per lb.....5.00c.

Wire Products

Nails, base, per keg.....$3.00
Galvanized nails, 1 in. and over.....$2.25 over base
Galvanized nails, less than 1 in..... 2.50 over base
Bright plain wire, base, No. 9 gage, per 100 lb.....$2.75
Annealed fence wire, base, per 100 lb..... 2.90
Spring wire, base, per 100 lb..... 3.70
Galvanized wire, No. 9, base, per 100 lb..... 3.35
Galvanized barbed, base, per 100 lb..... 3.80
Galvanized staples, base, per keg..... 3.80
Painted barbed wire, base, per 100 lb..... 3.45
Polished staples, base, per keg..... 3.45
Cement coated nails, base, per count keg..... 2.70
Woven fence, carloads (to jobbers).....67½ per cent off list
Woven fence, carloads (to retailers).....65 per cent off list

Bolts and Nuts

Machine bolts, small, rolled threads,
60, 10 and 10 per cent off list
Machine bolts, all sizes, cut threads..60 and 10 per cent off list
Carriage bolts, ⅜ x 6 in.:
Smaller and shorter, rolled threads.60 and 10 per cent off list
Carriage bolts, cut threads, all sizes.....60 per cent off list
Lag bolts .....65 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads...50 and 10 per cent off list
Other style heads.....50 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in.,
50 and 10 per cent off list
Larger and longer sizes.....50 and 10 per cent off list
Hot pressed square or hex. nuts, blank.....4.25c. off list
Hot pressed nuts, tapped.....4.25c. off list
C.p.c. and t. square or hex. nuts, blank.....4.00c. off list
C.p.c. and t. square or hex. nuts, tapped.....4.00c. off list
Semi-finished hex. nuts:
⅞ in. and smaller, U. S. S.....80 and 5 per cent off list
⅝ in. and larger, U. S. S.....75 and 5 per cent off list
Small sizes, S. A. E.....80, 10 and 5 per cent off list
S. A. E., ⅝ in. and larger.....75, 10 and 5 per cent off list
Stove bolts in packages.....75, 10 and 5 per cent off list
Stove bolts in bulk.....75, 10, 5 and 2½ per cent off list
Tire bolts .....60 and 10 per cent off list
Bolt ends with hot pressed nuts.....60 and 5 per cent off list
Turnbuckles, with ends, ½ in. and smaller,
55 and 5 to 50 per cent off list
Turnbuckles, without ends, ½ in. and smaller,
70 and 10 to 65 and 5 per cent off list
Washers .....5c. to 5.25c. off list

Semi-Finished Castellated and Slotted Nuts

(To jobbers and consumers in large quantities f.o.b. Pittsburgh.)

	Per 1000 S. A. E.	U. S. S.
¼-in.	$ 4.80	$ 4.80
⅜-in.	5.50	6.00
⅝-in.	6.50	7.00
⅞-in.	9.00	9.50
1-in.	11.00	11.50
1⅛-in.	15.00	15.00
1¼-in.	19.50	20.00
1⅜-in.	28.50	28.50
1½-in.	37.00	37.50
1⅞-in.	58.50	60.50

Larger sizes—Prices on application.

Cap and Set Screws

Milled square and hex. head cap screws....70 per cent off list
Milled set screws.....70 per cent off list
Upset cap screws.....75 and 10 per cent off list
Upset set screws.....75 and 10 per cent off list
Milled studs .....50 and 10 per cent off list

Rivets

Large structural and ship rivets, base, per 100 lb..$2.70 to $2.85
Small rivets .....70 to 65 and 10 off list

Track Equipment

Spikes, ⅝ in. and larger, base, per 100 lb.....	$3.15
Spikes, ½ in., ⅞ in. and ⅝ in., per 100 lb.....$3.15 to	3.50
Spikes, ⅜ in..... 3.15 to	3.50
Spikes, boat and barge, base, per 100 lb.....	3.50
Track bolts, ¾ in. and larger, base, per 100 lb.. 4.00 to	4.25
Track bolts, ½ in. and ⅝ in., base, per 100 lb.. 5.00 to	5.50
Tie plates, per 100 lb..... 2.55 to	2.60
Angle bars, base, per 100 lb.....	2.75

Welded Pipe

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜.....+	11	+39
¼ to ⅜.....	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½.....	30	13
1 to 3.....	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6.....	59	47½	2½	26	11
7 and 8.....	56	43½	3 to 6.....	28	13
9 and 10.....	54	41½	7 to 12.....	26	11
11 and 12....	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3.....	61	50½
¼ to ⅜.....	47	30½	¼ to ⅜.....+	19	+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½.....	60	49½	1 to 1½.....	30	14

Lap Weld, extra strong, plain ends

2	53	42	2	23	9
2½ to 4.....	57	46½	2½ to 4.....	29	15
4½ to 6.....	56	45½	4½ to 6.....	28	14
7 to 8.....	52	39½	7 to 8.....	21	7
9 and 10.....	45	32½	9 to 12.....	16	2
11 and 12....	44	31½			

To the large jobbing trade the above discounts are increased by one point, with supplementary discounts of 5 per cent on black and 1½ points, with a supplementary discount of 5 per cent on galvanized.

Boiler Tubes

Lap Welded Steel		*Charcoal Iron*	
2 to 2¼ in.....	27	1½ in. .....+	18
2½ to 2¾ in.....	37	1⅝ to 1⅞ in.....+	8
3 in.	40	2 to 2¼ in.....—	2
3¼ to 3¾ in.....	42½	2½ to 3 in.....—	7
4 to 13 in.....	46	3¼ to 4½ in.....—	9

Less carload lots 4 points less.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	55	3 and 3¼ in.....	36
1¼ and 1½ in.....	47	3½ and 3¾ in.....	37
1¾ in.	31	4 in.	41
2 and 2¼ in.....	22	4½ in. and 5 in.....	33
2½ and 2¾ in.....	32		

Hot Rolled

3 and 3¼ in.....	38	4 in.	43
3½ in. and 3¾ in....	39		

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extras for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be sold at mechanical tube list and discount. Intermediate sizes and gages not listed take price of net larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30, base.....83 per cent off list
Carbon 0.30 to 0.40, base.....81 per cent off list
Plus usual differentials and extras for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

	Cents per Ft.		Cents per Ft.
2-in. O.D. 12 gage....	15	2¼-in. O.D. 10 gage..	20
2-in. O.D. 11 gage....	16	3-in. O.D. 7 gage.....	35
2-in. O.D. 10 gage....	17	1½-in. O.D. 9 gage...	15
2¼ in. O.D. 12 gage..	17	5⅝-in. O.D. 9 gage...	55
2¼-in. O.D. 11 gage..	18	5½-in. O.D. 9 gage...	57

Tin Plate

Standard cokes, per base box.....$5.50

Terne Plate

(Per Package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.00	20-lb. coating I. C....	$14.90
8-lb. coating I. C....	11.30	25-lb. coating I. C....	16.20
12-lb. coating I. C....	12.70	30-lb. coating I. C....	17.35
15-lb. coating I. C....	13.95	35-lb. coating I. C....	18.35
		40-lb. coating I. C....	19.35

Sheets

Blue Annealed

Nos. 9 and 10 (base), per lb.....3.00c.

Box Annealed, One Pass Cold Rolled

No. 28 (base), per lb.....3.75c. to 3.85c.

Automobile Sheets

Regular auto body sheets, base (22 gage), per lb.....5.35c.

Galvanized

No. 28 (base), per lb.....4.90c. to 5c.

Long Ternes

No. 28 gage (base), 8-lb. coating, per lb.....5.30c.

Tin-Mill Black Plate

No. 28 (base), per lb.....3.85c.

Prices of Raw Materials, Semi-Finished and Finished Products

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron	$6.45
Old range non-Bessemer, 51½ per cent iron	5.70
Mesabi Bessemer, 55 per cent iron	6.20
Mesabi non-Bessemer, 51½ per cent iron	5.55

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	10.50c.
Iron ore, Swedish, average 66 per cent iron	10.50c.
Manganese ore washed, 51 per cent manganese, from the Caucasus, nominal	41c.
Manganese ore, ordinary, 48 per cent manganese, from the Caucasus	38c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, per unit, in 60 per cent concentrates	$8.25 to $10.00
Chrome ore, basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f. Atlantic seaboard	18.00 to 28.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	75c. to 85c.

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$110.00
Ferromanganese, British, 80 per cent, f.o.b. Atlantic port, duty paid	110.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent	$40.00
Spiegeleisen, domestic, 16 to 19 per cent	39.00
Ferrosilicon, 50 per cent, delivered	$80.00 to 82.50
Ferrosilicon, Bessemer, 10 per cent	41.50
Ferrosilicon, Bessemer, 11 per cent	44.00
Ferrosilicon, Bessemer, 12 per cent	48.50
Ferrosilicon, Bessemer, 13 per cent	52.10
Ferrosilicon, Bessemer, 14 per cent	57.10
Silvery iron, 6 per cent, $30.00; 7 per cent, $31.00; 8 per cent, $32.50; 9 per cent, $34.50; 10 per cent, $36.50; 11 per cent, $39.00; 12 per cent $41.50.	
Ferrotungsten, per lb. contained metal	88c. to 90c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered	12c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb.	11.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	$22.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	23.50

Per 1000 f.o.b. works:

Fire Clay:	High Duty	Moderate Duty
Pennsylvania	$42.00 to $45.00	$37.00 to $42.00
Maryland	47.00	42.00
Ohio	42.00 to 43.00	37.00 to 39.00
Kentucky	42.00 to 43.00	37.00 to 39.00
Illinois	——	37.00 to 42.00
Missouri	42.00 to 45.00	35.00 to 40.00
Ground fire clay, per net ton		6.00 to 7.00

Silica Brick:	
Pennsylvania	42.00
Chicago	49.00
Birmingham	50.00
Ground silica clay, per net ton	8.00
Magnesite Brick:	
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)	65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)	40.00
Chrome Brick:	
Standard size, per net ton	50.00

Semi-Finished Steel, F.O.B. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$40.00
Rolling billets, 2-in. and under	40.00
Forging billets, ordinary carbons	45.00
Sheet bars, Bessemer	42.50
Sheet bars, open-hearth	42.50
Slabs	$40.00
Wire rods, common soft, base, No. 5 to ¼-in.	51.00
Wire rods, common soft, coarser than ¼-in.	$2.50 over base
Wire rods, screw stock	$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp, grooved, per lb.	2.40
Skelp, sheared, per lb.	2.40
Skelp, universal, per lb.	2.40

Finished Iron and Steel, F.O.B. Mill

Rails, heavy, per gross ton	$43.00
Rails, light, new steel, base, lb.	2.25c.
Rails, light, rerolled, base, per lb.	1.85c. to 2.00c.
Rails, ⅛-in. and larger, base, per 100 lb.	$3.15
Spikes, ½-in., ⅞-in. and ⅝-in., base per 100 lb.	$3.15 to 3.50
Spikes, ⅛-in., base, per 100 lb.	3.15 to 3.50
Spikes, boat and barge, base, per 100 lb.	3.50
Track bolts, ⅝-in. and smaller, base, per 100 lb.	4.00 to 4.25
Track bolts, ¾-in. and larger, base, per 100 lb	4.75 to 5.50
Tie plates, per 100 lb.	2.55 to 2.60
Angle bars, per 100 lb.	2.75
Bars, common iron, base, per lb., Chicago mill	2.40c.
Bars, common iron, Pittsburgh mill	2.40c.
Bars, rails, steel reinforcing, base, per lb.	2.15c. to 2.25c.
Ground shafting, base, per lb.	3.40c.
Cut nails, base, per keg	$3.15 to $3.25

Alloy Steel

S.A.E. Series Numbers	Bars 100 lb.
2100*(1½% Nickel, 10 to 20 per cent Carbon)	$3.25 to $3.50
2300 (3½% Nickel)	5.50 to 5.75
2500 (5% Nickel)	7.75 to 8.00
3100 (Nickel Chromium)	4.50 to 4.75
3200 (Nickel Chromium)	6.00 to 6.25
3300 (Nickel Chromium)	8.25 to 8.50
3400 (Nickel Chromium)	7.25 to 7.50
5100 (Chromium Steel)	3.75 to 4.00
5200*(Chromium Steel)	8.00 to 8.25
6100 (Chromium Vanadium bars)	5.25 to 5.50
6100 (Chromium Vanadium spring steel)	4.50 to 4.75
9250 (Silico Manganese spring steel)	4.10 to 4.25
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	5.00 to 5.25
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.75 to 5.00
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	4.25 to 4.50
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.50 to 4.75

Above prices are for hot-rolled alloy steel bars, forging quality, per 100 lb., f.o.b. Pittsburgh. Billets 4 x 4 in. and larger are $10 per gross ton less than net ton price for bars of same analyses. On smaller than 4 x 4-in. billets down to and including 2½-in. sq. there is a size extra of $10 per gross ton; on billets smaller than 2½-in. sq., the net ton bar price applies.

*Not S.A.E. specifications, but numbered by manufacturers to conform to S.A.E. system.

Freight Rates

All freight rates from Pittsburgh on finished iron and steel products, carload lots, per 100 lb.:

Philadelphia, domestic	$0.32	Buffalo	$0.265	St. Louis	$0.43	Pacific Coast	$1.15
Philadelphia, export	0.235	Cleveland	0.215	Kansas City	0.735	Pac. Coast, ship plates	1.34
Baltimore, domestic	0.31	Cleveland, Youngstown		Kansas City (pipe)	0.705	Birmingham	0.53
Baltimore, export	0.225	Comb.	0.19	St. Paul	0.60	Memphis	0.56
New York, domestic	0.34	Detroit	0.29	Omaha	0.735	Jacksonville, all rail	0.70
New York, export	0.255	Cincinnati	0.29	Omaha (pipe)	0.705	Jacksonville, rail and water	0.415
Boston, domestic	0.365	Indianapolis	0.31	Denver	1.27	New Orleans	0.67
Boston, export	0.255	Chicago	0.34	Denver (pipe)	1.215		

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 35c.; ship plates, 40c.; ingot and muck bars, structural steel, common wire products including cut or wire nails, spikes, and wire hoops, 40c.; sheets and tin plates, 40c.; sheets, No. 12 gage and lighter, 50c.; rods, 40c.; wire rope cables and strands, 45c.; wire fencing, netting and stretcher, 40c.; pipes not over 12 in. in diameter, 55c.; over 12 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

FABRICATED STEEL BUSINESS

Numerous Awards Total 14,500 Tons and Fresh Inquiries Call for 22,200 Tons

In the fabricated steel field railroad bridge work is noteworthy. Awards covering 17 projects of various kinds call for upward of 14,500 tons and fresh proposals, few of unusual size, add 22,200 tons to the business under negotiation. The principal bookings are as follows:

New York Edison Co., sub-station on Forty-eighth Street, New York, 600 tons, to Hedden Iron Construction Co.

Public School No. 210, New York, 1300 tons, to Turner Construction Co.

Florida East Coast Railroad, bridges, 100 tons, to Virginia Bridge & Iron Co.

Highway bridge at Middlesex, N. J., 100 tons, to Phoenix Iron Co.

New York Central, bridge near Albany, N. Y., 250 tons, to American Bridge Co.

Boston & Maine Railroad, bridge at Gorham, N. H., 500 tons, to McClintic-Marshall Co.

Lancashire residence on Sixty-ninth Street, New York, 350 tons, to American Bridge Co.

Standard Oil Co., work at Cleveland, 500 tons, to Massillon Bridge Co.

Office building at 972 Broad Street, Newark, N. J., 250 tons, to Hay Foundry & Iron Works.

St. George Hotel, Brooklyn, addition, 800 tons, to A. E. Norton, Inc.

Paterno apartment building, West Eighty-sixth Street, New York, 800 tons, to Paterson Bridge Co.

Union Stock Yards, South Omaha, Neb., viaduct, 3100 tons, to Omaha Structural Steel Co.

Chicago, Burlington & Quincy, 20 girder spans and miscellaneous repairs, 738 tons, to American Bridge Co.

Arlington Hotel, Hot Springs, Ark., 156 tons, to Virginia Bridge & Iron Co.

Louisville & Nashville, bridge work, 500 tons additional, to the American Bridge Co.

Standard Sanitary Mfg. Co., Baltimore plant, 3700 tons, to Fort Pitt Bridge Works.

Pittsburgh Plate Glass Co., Creighton, Pa., plant extension, 600 tons, to McClintic-Marshall Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

New York Telephone Co., exchange on Seventy-third Street, New York, 750 tons.

Bridge over Raritan River at Perth Amboy, N. J., 6000 tons; bids close Nov. 22. (This work previously reported, former bids having been rejected.)

Atlantic Coast Line, bridge, 100 tons.

Homeopathic Hospital, Middletown, N. Y., 700 tons.

Erasmus High School, New York, 1200 tons.

Virginian Railway, bridge, 150 tons.

Chesapeake & Ohio Railroad, bridge, 150 tons.

Steinway & Sons, piano warehouse and salesrooms, Fifty-seventh Street, New York, 3000 tons. (This work previously reported, but now being refigured.)

Lefcourt office and loft building, Broadway at Thirty-sixth Street, New York, 5000 tons, may be awarded this week.

Gilbert loft building on West Thirty-fifth Street, New York, 1500 tons.

Union League Club building, Chicago, 5000 tons.

Purdue University building, Lafayette, Ind., 400 tons.

Pennsylvania Railroad, Fifty-sixth Street viaduct, Chicago, 350 tons.

Great Northern Railroad, I-beam spans, 400 tons, and truss and girder work, 1000 tons.

Stone & Webster, Boston, power house at Fall River, Mass., 3500 tons.

Belamose Corporation, Dividend, Conn., silk mill, 1000 tons.

Masonic Temple, Portsmouth, Ohio, 800 tons, bids being taken.

Third National Bank, Dayton, Ohio, 1050 tons, bids close Nov. 20.

Niagara Falls Hospital, Niagara Falls, N. Y., 150 tons.

RAILROAD EQUIPMENT BUYING

Orders Placed for Repairs to 800 Cars—Inquiries for 600 New Cars

Orders for repairs to 800 cars, inquiries for repairs to 3000 cars and inquiries for 600 new cars are the chief items in the railroad equipment field. The fresh developments are in part the following:

The Carnegie Steel Co. has awarded orders for the repair of 500 coke cars to the Koppel Car Repair Co. and the Greenville Steel Car Co.

It is expected that the Norfolk & Western Railroad will issue an inquiry next week for 4000 or 5000 new freight cars.

The Chesapeake & Ohio is in the market for repairs to 3000 freight cars.

The Wabash is formally in the market for 250 gondola cars of 70 tons' capacity.

The Chicago & Alton is inquiring for 250 40-ton box cars.

The Spokane, Portland & Seattle has ordered 50 flat cars from the American Car & Foundry Co.

The Gulf Coast Lines have bought 4 coaches, 2 partition coaches, 2 baggage and mail cars from the American Car & Foundry Co.

The Central Railroad of New Jersey has placed 50 coaches with the Standard Steel Car Co., 5 combination cars with the Pressed Steel Car Co. and 10 baggage cars with the American Car & Foundry Co.

The Illinois Traction Co. is inquiring for 100 box cars.

The Missouri Pacific will itself undertake the repair of 200 general service cars, 100 gondola cars and 25 to 50 passenger cars.

The Louisville, Henderson & St. Louis has placed 1 locomotive with the American Locomotive Co.

Tonnage Rate of Sheet and Tin Mill Workers Advanced

YOUNGSTOWN, Nov. 13.—Tonnage rates of sheet and tin mill workers in mills operating under the sliding wage scale agreement of the Amalgamated Association of Iron, Steel and Tin Workers advance 1½ per cent for the November-December period, to 48 per cent above base, as a result of the bimonthly settlement conducted today.

The average selling price of Nos. 25, 27 and 28-gage black sheets was revealed as $3.75 per 100 lb., on shipments for the 60 days ending Nov. 1. This compares with a $3.70 average two months before.

This is the highest wage rate for such employees since war time prosperity, and is 36 per cent above the lowest rate paid in 1921.

James H. Nutt of Youngstown represented the Western Sheet and Tin Plate Manufacturers' Association, and M. F. Tighe of Pittsburgh the employees.

Proposed Republic Extensions

YOUNGSTOWN, Nov. 13.—Extensions to its buttweld pipe mill capacity are being considered by the Republic Iron & Steel Co. Such additional capacity would involve some rearrangement of plant facilities at Youngstown.

The Youngstown Sheet & Tube Co. recently authorized two new buttweld pipe mills at its Chicago property, acquired from the Steel & Tube Co.

Welding Methods in Budd Plant

Methods of welding employed in the plant of the Edward G. Budd Mfg. Co., Philadelphia, will be described and motion pictures of the processes will be shown by Joseph W. Meadowcroft, general superintendent of welding of that company, at a meeting of the Philadelphia section, American Welding Society, at the Engineers' Club, Philadelphia, Monday evening, Nov. 19. This will be the first time that pictures of the Budd welding operations have been shown outside of the Budd plant. A. Schroeder of the Standard Electric Welding Co. is secretary of the Philadelphia section.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin	Lead		Zinc	
Nov.	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
7.....	13.00	12.37½	43.37½	6.75	6.45	6.70	6.35
8.....	13.25	12.50	43.10	6.75	6.45	6.72½	6.37½
9.....	13.50	12.75	43.00	6.75	6.50	6.75	6.40
10.....	13.50	12.87½	....	6.75	6.50	6.75	6.40
12.....	13.50	13.00	43.45½	6.75	6.50	6.77½	6.42½
13.....	13.50	13.25	44.37½	6.85	6.55	6.80	6.45

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, Nov. 13.

Prices of all the metals are higher and most of the markets are quite active. There has been heavy buying of copper, with electrolytic advancing every day. The tin market is more active and higher and there is a considerably firmer tendency in lead, with quotations slightly advanced. The zinc market is about 10 points higher than a week ago, with buying only moderate.

Copper.—Pronounced activity characterizes the copper market and the amount of buying and the advance in prices has been striking. The advance in prices has been based on actual sales which have been the largest in some time. The buying has been for both foreign and domestic consumers. Most of the European countries participated, particularly France and England, and the Far East was a buyer. Domestic sales have been both for early and for first quarter delivery. The rise in quotations has been over 1¼c. per lb. in the last week and electrolytic today is quoted at a minimum of 13.50c., delivered, with some sellers asking ⅛c. to ½c. higher. General statistics recently made public show that October was one of the largest months this year so far as deliveries into consumption were concerned. Production, however, continues unchecked and is still regarded as the key to the future of the market. Lake copper is quoted at 13.50c. to 13.62½c., delivered, and is also in stronger demand.

Tin.—The week has been a fairly active one at advancing prices. On Nov. 5, 7 and 8 it is estimated that at least 1000 tons of Straits tin was sold, with both consumers and dealers the buyers. It appears as if consumers' stocks are getting low and that they are forced to make purchases. It is not at all improbable that they may be obliged to buy actively in the next two months and that the December position may become tight. The statistical position is favorable to this and very few London firms are offering the metal liberally. On Friday, Nov. 9, about 300 tons changed hands at 43c. and on Saturday, Nov. 10, a good business was done with consumers the leading buyers. Yesterday, Monday, about 500 tons changed hands, both consumers and dealers participating, and today has been fairly active. Spot Straits tin today is quoted at 44.37½c., New York, and the London market is considerably higher at an advance of about £4 per ton over yesterday. Spot standard today was quoted at £221, future standard at £221 and spot Straits at £222, all about £13 per ton higher than a week ago. On the New York Metal Exchange, between Nov. 5 and 9, about 275 tons were sold. Conditions in the market point to a repetition of the heavy buying movement of a year ago which started in September and lasted until March, the main difference being that the beginning is two months later. Arrivals thus far this month have been 3450 tons, with 4689 tons reported afloat.

Lead.—The American Smelting & Refining Co. today increased its quotation from 6.75c. to 6.85c., New York. A firmer tone characterizes the market both here and in the West, where higher prices have prevailed for several days, the quotation at St. Louis now being 6.55c., with business done recently around 6.50c. Demand continues excellent and consumption is heavy.

Zinc.—Despite unfavorable statistics which show that stocks increased 2894 tons in October and that production was nearly 10,000 tons in excess of domestic shipments, the market is firmer and prices are higher, prime Western being quoted today at 6.45c., St. Louis, or 6.80c., New York. Actual buying of the metal has been only fair, but there is an improvement in sentiment based partly on a more active demand and a better outlook in the brass trade.

Nickel.—Shot and ingot nickel are quoted unchanged at 29c. to 32c. per lb., with electrolytic nickel held at 32c. by the leading producers. In the outside market both shot and ingot nickel are quoted at 29c. to 32c.

Antimony.—The market continues to advance and wholesale lots of Chinese metal are quoted at 9.25c., New York, duty paid.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted by importers at 25c. to 26c. per lb., duty paid, New York, with only a few sellers able to obtain the metal from the principals.

Old Metals.—Business is active and values are advancing. Dealers' selling prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible	13.50
Copper, heavy and wire	11.50
Copper, light and bottoms	10.00
Heavy machine composition	10.25
Brass, heavy	7.75
Brass, light	6.25
No. 1 red brass or composition turnings	8.75
No. 1 yellow red brass turnings	6.75
Lead, heavy	6.25
Lead, tea	5.50
Zinc	5.00
Cast aluminum	16.25
Sheet aluminum	16.25

Chicago

Nov. 13.—All of the metals are more active. Considerable tonnages of copper have changed hands, some of them being for future deliveries. Tin is stronger than had been expected in view of heavy tonnages scheduled for arrival this month, which would ordinarily be regarded as an adverse factor. Lead is not freely offered and producers are not pressed to dispose of their supplies. The situation in zinc is not so favorable. Antimony continues to gather strength in the absence of foreign offerings. Copper, tin and antimony have advanced, while lead and zinc remain stationary. Business in the old metals has materially improved, with prices generally higher. We quote in carload lots: Lake copper, 13.50c.; tin, 43.50c.; lead, 6.50c.; spelter, 6.40c.; antimony, 11c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 10.50c.; copper bottoms, 9.25c.; red brass, 8.50c.; yellow brass, 6.50c.; lead pipe, 5.50c.; zinc, 4.25c.; pewter, No. 1, 23c.; tin foil, 30c.; block tin, 35c.; all buying prices for less than carload lots.

Ford Motor Co. Planning to Increase Production

The Ford Motor Co. is at present urging a speed-up program for all parts and accessories manufacturers which will permit of their increasing their production during the first half of 1924 to 8000 or 9000 cars per day. The continued demand for motor cars is pointed to as justifying the increased production. The Ford sales department is so far behind in orders that delivery of cars, particularly of the closed type, requires from one to four weeks, in spite of the fact that the company is working two 8-hour shifts.

The Ford company has not set any definite production figure but it is getting all lines of assembling in order, so it will be in a position to keep step with the sales department, and present indications are it will need the above mentioned number of cars per day to fill the orders.

C. D. Carey, assistant to the president, Verona Steel Castings Co., Verona, Pa., will be the speaker at the regular monthly meeting of the Pittsburgh Foundrymen's Association, Monday evening, Nov. 19, at the General Forbes Hotel. His subject is, "The Trend of Specifications and Inspection in the Casting Industry."

PERSONAL

Leo F. Caproni, who recently became assistant sales manager of the Palmer Steel Co., Inc., designer, fabricator and director of steel structures, Springfield, Mass., has been continuously identified with different departments of the fabricating steel business since his graduation in 1911 from the engineering course at Dartmouth College. He has successively been with the Lally Column Co., manufacturer of concrete filled pipe columns, the National Bridge Works where his work included contracting and engineering after learning details of the business, the Bethlehem Steel Co., where he was engaged in the selling department of the New York office, and the Hay Foundry & Iron Works, New York, where he was assistant contracting engineer.

LEO F. CAPRONI

Lewis S. West, vice-president and general manager Merchants Dispatch Transportation Co., East Rochester, N. Y., has been elected a director of the Genesee Valley Trust Co., that city.

Harbor Mitchell, who resigned recently as vice-president and general manager of the American Foundry & Construction Co., Pittsburgh, has been appointed assistant to Mr. Floersheim of B. Floersheim & Co., piping engineers and contractors, Pittsburgh. Mr. Mitchell is a graduate in mechanical engineering from West Virginia University and has had 15 years' experience in the selling and manufacture of piping systems.

Lee M. Clegg has been made sales manager of the Steel Products Co., Cleveland and Detroit. He is a graduate of Case School of Applied Science, Cleveland, and has been with the company since 1919 in the efficiency department, and during the past several months has been assistant sales manager under J. A. Krider, secretary-treasurer.

W. E. Schmid,.mechanical engineer Combustion Engineering Corporation, has been assigned to the branch office in Paris, the Société Anonyme des Foyers Automatiques.

Thomas P. Anthony has been appointed chief engineer of the United States Cast Iron Pipe & Foundry Co., Burlington, N. J. P. T. Laws was appointed Southern manager, with offices at 1002 American Trust & Savings Bank Building, Birmingham, Ala.

J. W. McQueen, president Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., spent several days in St. Louis last week, and on Thursday was host to 14 foundrymen of the district at a luncheon at the Missouri Athletic Association.

W. J. Mackenzie, metallurgist Interstate Iron & Steel Co., Chicago, will address a combined meeting of the Cincinnati Engineers' Club and the American Society for Steel Treating on Thursday evening, Nov. 15, at the Chamber of Commerce. The meeting will be preceded by a dinner.

Frederick W. Henrici, assistant engineer of the erecting department American Bridge Co., Pittsburgh, was the speaker at a joint meeting of the civil section, Engineers Society of Western Pennsylvania, and the Pittsburgh section, American Society of Civil Engineers, at the William Penn Hotel, Pittsburgh, on Tuesday evening, Nov. 13. He described the erection of the Southern Railroad bridge over the Ohio River at Cincinnati.

J. V. W. Reynders and F. F. Sharpless, national vice-president and secretary respectively of the American Institute of Mining & Metallurgical Engineers, will be principal speakers at the subscription dinner to be given by the Ohio section of the Institute at the Hotel Winton, Cleveland, Nov. 16.

E. E. Helm has resigned as industrial secretary of the Akron, Ohio, Chamber of Commerce, to become Detroit branch manager of the Bridgeport Brass Co., Bridgeport, Conn.

Charles N. Ring, formerly identified with the Ohio Steel Foundry Co., Lima, Ohio, has been appointed manager of the Allied Steel Castings Co., West Harvey, Ill.

J. G. Penwell, plant superintendent General American Tank Car Corporation, East Chicago, Ind., has been promoted to manager to succeed O. J. Parks, transferred to the Chicago offices as head of the sales department.

E. P. Mathewson of New York, president American Institute of Mining and Metallurgical Engineers, has been elected representative fellow of McGill University, Montreal, for countries outside of Canada and Newfoundland. He will serve for three years and becomes a member of the McGill Corporation. Mr. Mathewson was born in Montreal in 1864 and received from McGill the degree of bachelor of science in mining in 1885.

Stanley A. Richardson has returned to the faculty of the department of engineering, Lewis Institute, Chicago, and has resumed charge of the courses offered in metallography and ferrous metallurgy.

Harry J. Rothrock has been appointed assistant foundry superintendent of the Deemer Steel Casting Co. of New Castle, Del. During the last four years he has been with the Taylor Wharton Iron & Steel Co., and was superintendent of the steel foundry department at the Easton, Pa., plant during the last two years.

George S. Brush, who resigned recently as general manager of the Houston Electric Railway Co., Houston, Tex., has been made assistant to the president of the Ballard Oil Equipment Co., Boston.

Thomas H. Wickenden of the development and research department International Nickel Co. was guest of the Hartford chapter, American Society for Steel Treating, on Tuesday evening, Nov. 13, at the Hartford Engineers' Club, Hartford, Conn. He spoke on alloy steels in automotive construction.

Wilson Oliver has been appointed manager of the Pittsburgh branch, Oliver Brothers, Inc., New York, to succeed O. A. Lanchantin, who has resigned to become sales manager of the Eastern Steel Products Corporation, Spring City, Pa. Mr. Oliver is a son of the late Thomas E. Oliver, founder and for 30 years president of the Oliver Brothers, Inc. He has been identified with the company since 1913 and before that for several years was associated with a wholesale house. Mr. Oliver enlisted in the Essex troop of New Jersey at the outbreak of the war and had actual service overseas.

T. Holland Nelson, formerly steel works manager with Henry Disston & Sons, Inc., and finally in charge of its metallurgical research, has resigned to take charge of the works at Titusville, Pa., of the Cyclops Steel Co. Mr. Nelson is a native of Sheffield, Eng., was educated at Sheffield University, and was for several years employed by Thos. Firth & Sons, Ltd., Sheffield, finally becoming assistant to Harry Brearley, British metallurgist and inventor of stainless steel. Mr. Nelson came to the United States in 1911 and joined the Simonds Mfg. Co., later transferring to Henry Disston & Sons. He returned to England, enlisted in the British Army at the outset of war and was detailed to the manufacture of munitions. He was connected with the firm of Peter Stubs, Ltd., and left that company as managing director in 1920 to return to the United States.

Dean Mortimer Elwyn Cooley of the University of Michigan has been invited to a dinner to be given in his honor on Nov. 23 at the Hotel Statler, Detroit, by several engineering societies jointly. The engineering societies and Dean Cooley's host of associates and friends are taking this means of expressing their appreciation of his service to the engineering profession

as well as their admiration of his lifelong success and many attainments.

G. B. Armstrong, formerly Michigan representative of the Globe Automatic Sprinkler Co., and later vice-president of the Acme Co., has been chosen vice-president and sales manager of the Viking Automatic Sprinkler Co., with headquarters in Hastings, Mich.

Clarence F. Williams, Cadillac, Mich., has been made president of the Acme Motor Truck Co., that city, succeeding Walter A. Kysor, who recently resigned. Mr. Williams is actively interested in the Cadillac Metal Parts Co., is president of the Simplex Wire Wheel Co., and is an officer of the Cadillac State Bank.

D. De Vries, director R. S. Stokvis & Zonen, Rotterdam, will arrive in New York on the Nieu Amsterdam, Nov. 17. Mr. De Vries has been absent from America four years and plans to visit the many connections of his company while here.

OBITUARY

THOMAS ADAMSON FERNLEY, secretary-treasurer of the National Supply and Machinery Dealers' Association, died on Nov. 6 at Germantown Hospital, Philadelphia. He had been ill since September, of Bright's disease, and for several weeks his condition had been serious. Mr. Fernley was 39 years old and had been for several years secretary of various trade associations affiliated with his father, T. James Fernley, and his brother, George Fernley of the National Hardware Association. Prior to his entrance into association work Mr. Fernley was associated with his father in the wholesale hardware business. He was a grandson of George P. Adamson of Baeder, Adamson & Co., Philadelphia. His wife and two children, Thomas A., Jr., and Harriette M. Fernley survive.

THOMAS A. FERNLEY

CYRUS G. HENRY, blast furnace superintendent, E. & G. Brooke Iron Co., Birdsboro, Pa., died suddenly at his home in that city on Oct. 31, in his fifty-seventh year. He was born in Kutztown, Pa., but moved to Birdsboro early in life and attended the schools there, working later at the flour mill of the Birdsboro Milling Co. In 1897 he was employed by the Brooke company as clerk at No. 3 blast furnace and in 1900 became superintendent, which position he held until the time of his death. He was a very able and conscientious man and a most useful citizen, interested in all the activities of the town in which he lived.

CHARLES O. BROWN, president, Star Furnace Co., Jackson, Ohio, died suddenly on the morning of Nov. 8, from a heart stroke. He had lived in Jackson County practically all his life, having been born at Howard Furnace in 1856. His father built the Star furnace in 1866. Mr. Brown had been in responsible charge of the furnace company for the past 20 years, though his brother, Lewis V. Brown, who died last February, had held the title of president, to which Mr. Brown succeeded at that time.

CORNELIUS V. SIMPKINS, secretary and chief stockholder in the Union Stove Works, Peekskill, N. Y., which he entered 50 years ago as a molder, died on Nov. 9, at the home of his son in Peekskill, aged 86.

WILLIAM D. PACKARD, who with his brother, J. W. Packard, was the originator of the Packard automobile, died at his home in Warren, Ohio, on Nov. 11, aged 62 years. He had been an invalid for a long time and was blind during the last 10 years.

FRENCH MARKET UNSETTLED

Reparations Fuel Deliveries Low—Demand Light and Prices Weak—Foreign Competition Felt

PARIS, FRANCE, Nov. 2.—The French market continues unsettled. Inquiry is generally weaker, which is unusual at this time of year. Yet producers are now informed that the prices of coke will be maintained at 212 fr. for November and very likely for December. Nothing certain is as yet known on the resumption of indemnity fuel deliveries, and according to a statement of the Minister for Public Works, the shipments of coke from the Ruhr will not exceed 3000 tons a day for some time to come. Consequently, iron and steel production will not be increased (it was lower in September). A weakness in prices is appearing in some products. There are at least three factors claimed to be responsible for this situation: Diminution of the demand in the domestic and foreign markets; prospects of inflation in England, which would produce a marked decline of the pound; and the arrival on the domestic market of part of the products seized on the Ruhr.

Coke.—During October 126,355 tons of Ruhr coke was received, or a daily average of 4200 tons. From the latest information received, the monthly production of manufactured coke in France (including British, Dutch and American smalls) is now aggregating 120,000 tons, or about the equivalent of both the Nord and Pas-de-Calas mines.

Pig Iron.—Although French foundries seem but little inclined to buy Ruhr pig iron, even at 402 and 405 fr. per metric ton, owing to the uncertainty prevailing as to its quality, purchases in home grades are quite uninteresting and prices are lower. The average for No. 3 P. L. chill-cast foundry is between 406 and 415 fr. per ton, and 5 fr. less for the P. R., according to region and qualities. In some cases prices would have been 405 and 410 fr., but these evidently were exceptional quotations. Hematite is worth 425 to 435 fr. per ton at works. There have been no transactions in Cleveland cast-iron and East Coast mixed numbers because of the rapid decrease of prices in this country. Belgians are asking, f.o.b. Antwerp, 435 and 440 fr. (Belgian currency) for chill-cast. Luxemburg furnaces quote 440 to 445 fr. and Lorraine 440 fr. Very few offerings are noted in Bessemer. Lorraine sellers now accept orders around 390 and 400 fr. (French).

Semi-Finished Products.—The production for September will show a considerable decrease from August, about 60,000 tons, it is estimated. Steel works are now booking any orders offered, and although prices are nominally the same, numerous and large concessions are being made. In the domestic market, the following prices are quoted per 100 kg., f.o.b. East or Lorraine Works:

	Fr. per 100 Kg.
Ingots	47 to 49
Blooms	51 to 53
Billets	54 to 56
Largets	58 to 60

Belgian, Lorraine and Luxemburg works are quoting about the same prices for export:

	Fr. per Metric Ton Belgian Currency
Ingots	500 to 510
Blooms	520 to 530
Billets	540 to 560
Largets	570 to 590

Finished Material.—Many plants are still well booked ahead, so that concessions and the decrease in prices are less acute in this market. Low prices are quoted but for large orders only. The average in the East for beams is 60 and 62 fr. per 100 kg., and merchant steels about 62 and 65 fr. Wire rods bring 80 and 82 fr. for 6 to 8 weeks' delivery. Beams are quoted at 675 and 680 fr. and bars at 700 fr., f.o.b. Antwerp.

Sheets.—Inquiry is fairly active for large flats, heavy and medium sheets. In light gages, British competition is keen and domestic trade slow. Concessions are being made in prices. Large flats are quoted at 64 and 67 fr.; heavy sheets at 67 to 69 fr.; medium sheets, 83 to 89 fr.; light sheets, 93 to 98 fr. per 100 kg.

Plans of New Companies

The O'Neil Mfg. Co., 715-19 Palisade Avenue, West New York, N. J., will manufacture radio loud speakers for the Audiphone Co. of America, 39 Cortlandt Street, New York. L. R. O'Neil heads the company.

The Reliable Auto Radiator Works, 281 Central Avenue, Newark, N. J., has been organized to operate an automobile repair shop. William Berman heads the company.

The Nova Motors Corporation, New York, has been organized with capital stock of $100,000 to manufacture automotive products. The company is in the formative stage and will not be ready to take up operations for a while. Address is in care of A. W. Rinke, 165 Broadway.

The Brooks Boat Co., Inc., Saginaw, Mich., incorporated with $40,000 capital, paid in, has purchased the boat department of the Brooks Mfg. Co., Saginaw, and will manufacture craft up to 65-ft. cruisers, with complete equipment. It has taken over a large inventory of iron, brass and copper but will be in the market for these products from time to time. Plant has been purchased and with a little remodeling, it will be ready for operation. E. S. Palmerton is president and C. W. Forsyth, secretary-treasurer.

The Max Lehman Metal Co., care of J. Raymond Tiffany, 77 River Street, Hoboken, N. J., has been incorporated with $50,000 capital stock and will deal in scrap metals.

The Porter Engine Development Co., New York, has been incorporated with capital stock of $100,000 to manufacture engines for automotive service. The incorporators are J. D. Jones, F. A. Huck, and A. R. Kellegrew. Present address is in care of F. R. Porter, 2 Rector Street.

The Pressteel Engineering Co., 392 Fifth Avenue, New York, recently incorporated with capital stock of $200,000, will manufacture built-up sectional steel cabinets. The company is an outgrowth of the Universal Steel Cabinet Co., Inc., Brooklyn. It is expected that operations will begin within two weeks in a portion of the Curtis plant at Long Island City. Edward Chandler is president, Alvin N. Doe, vice-president, and Gilbert B. Tompkins, treasurer.

The F. D. Koehler Co., Staten Island, N. Y., has been incorporated with $30,000 capital stock to manufacture automobile accessories and equipment, but for the present will confine its activities to the distribution of gasoline and oil. Address is in care of Bernard Pollak, 63 Park Row, New York.

The Torrid Heat Corporation, Brooklyn, incorporated with capital stock of $50,000, will act as distributor of oil heating equipment. Incorporators are M. Bleakney, R. C. Scott, and G. Andrews. Address care of W. H. Orr, 350 Fulton Street, Brooklyn.

The New York-Worthington Burner Corporation, New York, recently incorporated with $25,000 capital stock, will act as distributor for the Worthington Oil Burner Co., Kansas City, Mo. No manufacturing is contemplated. Address care of Hunt, Hill & Betts, 120 Broadway.

The Technola Show Case Co., 11 Rock Street, Brooklyn, has been incorporated with $50,000 capital stock to manufacture show cases and office fixtures. Operations will be conducted on a small scale. The incorporators are A. N. Chipkin, G. D. Stefano, and C. Schwartz.

The Handon Boiler Corporation, New York, has been organized to act as manufacturers' agent in the distribution of boilers, tanks, etc. Organization matters are not fully completed. Address care of J. A. McNamara, 165 Broadway, New York.

Brady & Gough, 45 Warren Street, New York, has been organized by Arthur A. Brady and Robert A. Gough, formerly with the Hansen & York Co., to deal in hardware.

The Newark Transformer Co., 71 Hamilton Street, Newark, N. J., has been organized to manufacture transformers, specializing in the smaller units up to and including 50 kw. The company has a plant equipped for this purpose. D. J. Norton is president.

The Evansville Tool Works, Evansville, Ind., recently organized with $200,000 capital stock, is a reorganization of the company by that name manufacturing edge tools, hammers and blacksmith tools. Frank Lohoff is president; Irving S. Kemp, vice-president, and J. M. Stricker, secretary.

The Johnson Fuel Oil Burner Co., 349 Fairfield Avenue, Bridgeport, Conn., has been organized with $50,000 capital stock to manufacture burners, which will be made in San Francisco. The company will also do business as combustion engineer. R. D. Campbell is one of the heads.

The W. J. Collins Foundry Co., Inc., Box 205, Milford, Mass., has been organized to manufacture iron products, but definite plans are not yet known. W. J. Collins is head.

The Elbe Brass Works, Apple Street and Baltimore & Ohio Railroad, has been organized to manufacture brass valves. It now occupies a three-story building and has sufficient equipment for present needs. Henry Elbe is president.

The American Wire Form Co., 265-73 Grant Avenue, Jersey City, N. J., has been organized to acquire the American Wire Form Co., a New York company, and will manufacture wire baskets and machinery, window and skylight guards. It has plant and equipment. M. B. Sheldon is one of the principals.

The Scientific Apparatus Corporation, Milton, Pa., recently organized, will concentrate on the manufacture of Microscopes. The company is now in rented quarters but expects to get a building of its own. Good sized bookings are now on hand. J. C. Lindner is secretary.

The Kingsley Die Casting Co. Anderson, Ind., recently organized, will take over the business of the Forse Machine Co. and will continue operations in the buildings acquired. Some expansion will be made to accommodate additional die-casting machines and other equipment. The directors are: J. C. English, W. H. Forse, and E. M. Kingsley.

Uniflow Pump & Manufacturing Co. has been incorporated at Columbus, Ohio, with a capital stock of $100,000 to manufacture water systems. Harry T. Wagner, is president; J. Arthur Snier, vice-president and general manager; John Westendorf, treasurer.

The Pike Laboratories, Ltd., Newaygo, Mich., has been organized to manufacture fender lights. Equipment has been placed for present needs. W. J. Pike is chairman of the board.

The Commercial Steel Co., Youngstown, Ohio, has been incorporated with 1000 shares, no par value stock, to manufacture iron and steel products. Plans have not yet been completed. Address care of McKain & Ohl, 1106 Mahoning Bank Building, Youngstown.

The Hartmann Auto Safety Light Corporation, New York, has been organized to manufacture automobile accessories. Awards have been placed for manufacture. Address care of Max L. Solinsky, 51 Chambers Street, secretary.

The New York Implement Co., Watertown, N. Y., was recently organized with capital of $50,000 and will act as jobber in agricultural implements. William H. Gilman is one of the principals.

The Excel Roofing & Sheet Metal Works, Inc., 15 Park Row, New York, was recently organized to install and deal in roofing products. James A. Levner is one of the principals.

The General Metal Products Co., Inc., North West End and McKinley Avenues, Lancaster, Pa., recently incorporated with capital stock of $25,000, will manufacture brass, bronze and aluminum castings and automobile specialties. A plant is now being built and all contracts have been placed. John E. McGovern is one of the heads.

The Goodyear-Zeppelin Corporation, New York, will be organized, following negotiations between the Zeppelin Co., of Germany and the Goodyear Tire & Rubber Co., New York, to construct lighter-than-air craft of the Zeppelin type. Within a few weeks an experienced technical staff will be at work in Akron, Ohio, to outline the project. Details are not yet available.

The Holmes Vapor Carburetor Motor Corporation, New York, has been incorporated with capital stock of $100,000, and purposes to manufacture automobiles. It has joined interests with the Sanford Motor Truck Co., South Norwalk, Conn., which manufactures a similar line. The Holmes organization also has a plant in Denver, which manufactures a 2½-ton chassis and turns out a six-wheel transporation truck. Its products are consumed principally in the Middle West. Direct operations of the Eastern concern will consist mainly in the assembling of parts, but negotiations for plant, equipment or manufacture will not be considered for a few weeks. Edward R. Holmes, Hotel Claman, 255 West Forty-third Street, heads the company.

The Oil Field Equipment Co., incorporated with capital stock of $50,000, to manufacture oil well machinery, will represent manufacturers of these lines in export fields. The company will not be active for several weeks. Thomas E. Ward, 30 Church Street, heads the company.

The White Showers, Inc., 6451-6471 Dubois Street, Detroit, has been incorporated with capital stock of $25,000 to manufacture irrigation equipment. A factory, now being built, is to be occupied within a few weeks. In making its product, the company will require pipe, valves and fittings, in conjunction with special fittings which will be made under contract. R. R. White is president.

Machinery Markets and News of the Works

AN INCREASE IN INQUIRY

Machine Tools in Better Demand Though Sales Show Little, if Any, Gain

A. O. Smith Corporation, Milwaukee, Puts Out List of 48 Machines for Prices—Some Railroad Buying

From all sections of the country a better inquiry for machine tools is reported, but sales have made no appreciable gain. Some of the current inquiry may be in anticipation of 1924 requirements, but, whatever the cause, it has created a slightly more hopeful feeling among tool builders.

The A. O. Smith Corporation, Milwaukee, has sent out a list of 48 machines for prices, this being the outstanding inquiry of the week. The Saco-Lowell Shops, Boston, is inquiring for a fairly large list of equipment. Not much business has come from Michigan automobile companies, which have been consistent buyers for some time.

The most promising of railroad developments is the appropriation by the Santa Fe of $3,400,000 for shop extensions at San Bernardino, Cal. Of this sum $900,000 is for a machine shop and $850,000 for a boiler shop, while the outlay for machinery and tools for these shops will be $900,000. Inquiries for the machines have not yet been issued. The Burlington road has distributed formal orders for fully 90 per cent of the tools on its list which included 25 engine lathes. The Illinois Central has bought a few machines. The Denver & Rio Grande Western has bought a 90-in. wheel quartering machine. The Baltimore & Ohio Railroad has added three tools to the list it recently issued.

Japanese business is developing very slowly, and it is not now expected that many orders will be placed until after the first of the year.

New York

NEW YORK, Nov. 13.

MORE inquiries are being received, but the volume of business being placed shows no betterment. It is believed that the greater number of inquiries indicates probable requirements of machine-tool users after the end of the year. There have been no developments in the expected buying of tools by Eastern railroads. The Denver & Rio Grande Western Railroad has ordered in the East a 90-in. wheel quartering machine. The Norma Co. of America, Long Island City, N. Y., which is building a plant at Stamford, Conn., for the manufacture of Hoffman Bearings, is expected to issue soon a list of its machine-tool requirements.

Bids will be received by the Superintendent of Lighthouses, Staten Island, N. Y., until Nov. 19, for approximately 40 tons 1⅝-in. stud link mooring chain, as per specifications on file.

Electric power equipment, conveying, folding and other machinery will be installed in the three-story plant, 100 x 150 ft., to be erected at 764-66 Fourth Avenue, Brooklyn, by E. J. Trum, Inc., 55 Third Street, manufacturer of paper boxes and containers, estimated to cost $125,000. William Higginson, 15 Park Row, New York, is architect.

The Columbia Machine Works & Malleable Iron Co., 269 Chestnut Street, Brooklyn, will commence the construction of a one-story foundry and machine shop, 75 x 490 ft., to cost $180,000 with equipment. Ward & Bender, 120 Broadway, New York, are engineers.

The Sociedade Anonyma Brasital, Santo do Itu, Sao Paulo, Brazil, has been granted permission by the State department, Sao Paulo, to construct and operate a hydroelectric generating plant at its textile mill, to cost about $200,000 with machinery. M. A. Cremer, assistant trade commissioner, United States Bureau of Foreign and Domestic Commerce, Rio de Janeiro, Brazil, has information regarding the project.

Thomas A. Digan, Inc., 656 Third Avenue, Brooklyn, operating a steamship supply business, will erect a two-story cold storage plant, 50 x 100 ft., for which bids will be taken at once. It will cost about $75,000. David M. Ach, 1 Madison Avenue, New York, is architect.

The Union Stove Works, Peekskill, N. Y., have tentative plans for the rebuilding of their plant destroyed by fire Nov. 3, with loss estimated at $400,000 including equipment. Headquarters of the company are at 70 Beekman Street, New York.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until Nov. 27, for 6000 ft. of copper wire cloth, for the Brooklyn Navy Yard, schedule 1553.

Bids are being asked by the chief storekeeper, Victorian Railways Commission, Melbourne, Australia, until Dec. 19, for one precision lathe, with necessary tools and accessories, size to handle work up to 18-in. in diameter and 54-in. long. Specifications on file at the offices of the Bureau of Foreign and Domestic Commerce, 734 Customhouse, New York; 1801 Customhouse, Boston; and Chamber of Commerce Building, Cincinnati.

Manual training equipment will be installed in the high school addition to be erected at Mount Kisco, N. Y., estimated to cost $200,000, for which plans will be drawn by Ernest Sibley, Bluff Road, Palisades, N. Y.

The Albany Perforated Wrapping Paper Co., Albany, N. Y., operating under the name of the A. P. W. Paper Co., has acquired property at Sheet Harbor, near Halifax, N. S., and plans the erection of a new pulp mill to cost appproximately $250,000 with machinery, including electric power equipment.

A. Rosati, 207 South Street, Jamaica, N. Y., has plans for a one-story machine shop, 40 x 87 ft., on South Street, to cost about $40,000 with equipment. W. Halliday, 28 Union Hall Square, is architect.

The Brooklyn Edison Co., 360 Pearl Street, Brooklyn, has plans in preparation for a one-story power house on West Twelfth Street to cost about $75,000.

The John Polachek Bronze & Iron Co., 480 Hancock Street, Long Island City, has awarded a general contract to Legano Brothers, 233 West Forty-third Street, New York, for two two-story additions, 85 x 150 ft. and 60 x 135 ft., respectively, including improvements in present plant, to cost about $160,000. M. L. Kaufman, 469 Seventh Avenue, New York, is engineer.

R. Liddielow, secretary, State Electricity Commission, Victoria, Melbourne, Australia, will receive bids until Dec. 15 for four 1000 kva. single phase transformers and spare parts, specification No. 23/145, for the Morwell Power Scheme; until Jan. 3, for aluminum steel-cored cable and accessories, specification No. 24/1; and until Jan. 19, for transformers, switchgear and accessory equipment for Station "B," specification No. 24/2. Copies of tender form

The Crane Market

Activity in electric overhead traveling cranes continues fair with several large inquiries pending, but the locomotive crane field is extremely quiet at present. The inquiry reported in preparation for some time by the New York Central & Hudson River Railroad for two 10-ton, 70-ft. span, gantry cranes for the West Shore Railroad, has not yet materialized. The Brooklyn Eastern District Terminal Co., Brooklyn, N. Y., has been receiving bids on a 25-ton gantry crane of special construction. The Phoenix Utility Co., 71 Broadway, New York, has not yet closed on the 25-ton, stationary, deep-well hoist, inquired for recently. The city of Fort Wayne, Ind., through Charles Brossman, consulting engineer, Merchants Bank Building, Indianapolis, or A. W. Grosvenor, 122 East Washington Street, Fort Wayne, is receiving bids on a 100-ton hoist for a movable dam on the Maumee River at Fort Wayne, bids opening in about thirty days. The Milwaukee Department of Public Works is receiving bids until Nov. 19 on a 5-ton hand power crane for the Riverside pumping station.

In the Pittsburgh district the steel companies are conspicuous among those who have asked prices on cranes and the feeling is that if the orders do not come out during the remainder of the year, they will in the fore part of 1924. In the pending business are six cranes for the foundry of the new Baltimore plant of the Standard Sanitary Mfg. Co., Pittsburgh; a 10-ton crane for the Steubenville works of the Wierton Steel Co., Wierton, W. Va.; a 5-ton, 27-ft. span, 3-motor crane for the Dillon Brothers Machine Co., Wheeling, W. Va., a revival of an old inquiry; a 5-ton, 50-ft. 6-in. span, 3-motor crane for the Guibert Steel Co., Pittsburgh, and a gantry crane for the Pittsburgh works of the A. M. Byers Co., Pittsburgh. Agar Cross & Co., 11 Broadway, New York, recently in the market for 68 chain hoists for shipment to South America, report award of the business to a German builder.

Among recent purchases are:

Lima Corporation, Lima, Ohio, two 30-ton trolleys with 10-ton auxiliaries, from the Shaw Electric Crane Co.

Spang, Chalfant & Co., Pittsburgh, a 5-ton, 2-hook trolley from the Shaw Electric Crane Co.

Southern Pacific Co., 165 Broadway, New York, 7½-ton electric crane from the Shaw Electric Crane Co.

Westinghouse Electric & Mfg. Co., Philadelphia, two 5-ton, 40-ft. span electric traveling cranes from an unnamed builder.

John A. Roebling's Sons Co., Trenton, N. J., a 2½-ton, 41-ft. span electric traveling crane from an unnamed builder.

Carnegie Steel Co., for Baltimore, Md., an 8-ton, 28-ft. span hand power crane from the Chisholm-Moore Mfg. Co.

Atlantic Steel Casting Co., Philadelphia, a 10-ton trolley from an unnamed builder.

American Chain Co., Bridgeport, Conn., a 5-ton, 47-ft. span electric traveling crane from the Shepard Electric Crane & Hoist Co.

Wabash Railroad Co. Decatur, Ill., a 25-ton, 50-ft. boom, locomotive crane with 1½-cu. yd. Blaw-Knox bucket, from the Industrial Works.

Pennsylvania Railroad, Philadelphia, 33 jib cranes for freight handling from the McMyler Interstate Co.

Riverside Ice Co., New York, a 15-ton locomotive crane from the McMyler Interstate Co.

M. & S. Coal Co., Akron, Ohio, two steam shovels from the McMyler Interstate Co.

Metals Refining Co., Hammond, Ind., a 5-ton, 33-ft. 8-in. span, 3-motor cage-operated crane from the Milwaukee Electric Crane & Mfg. Co.

Chicago Bearing Metals Co., Chicago, 40 overhead turntables for a monorail from the Whiting Corporation.

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and specifications available at the offices of the Bureau of Foreign and Domestic Commerce, 734 Customhouse, New York, and Room 830, 76 West Monroe Street, Chicago.

The New York Edison Co., 130 East Fifteenth Street, New York, has plans for a four-story power house, 45 x 81 ft., at 37-39 Jane Street, to cost $140,000. William Whitehall, 709 Sixth Avenue, is architect.

The Board of Directors, Rockaway Beach Hospital, Rockaway Beach, L. I., has authorized plans for a one-story power house and laundry to cost $42,000. Resler & Hesselbach, 41 East Forty-second Street, New York, are consulting engineers.

The Radiotive Corporation, 5317 Twenty-first Avenue, Brooklyn, manufacturer of radio headsets and other wireless equipment, will erect a three-story addition, 90 x 100 ft., to cost $65,000. Magnuson & Kleinert, 52 Vanderbilt Avenue, New York, are architects.

Manual training equipment will be installed in the two and one-half story senior high school to be erected on the Tuckahoe Road, Yonkers, N. Y., to cost about $735,000, for which a general contract will soon be let. G. Howard Chamberlain, 18 South Broadway, Yonkers, is architect.

Cranes, elevating equipment and other material-handling apparatus will be installed in the five-story building, 100 x 100 ft., to be erected by the Shupe Terminal Corporation, Lincoln Highway, Kearny, N. J., to cost about $500,000. Leo Feinen and George Bial, 3697 Boulevard, Jersey City, N. J., are architects. William F. Shupe is president.

The Western Electric Co., Inc., 195 Broadway, New York, has awarded a general contract to the Turner Construction Co., 244 Madison Avenue, for the initial unit at its proposed plant on Central Avenue, Kearny, N. J.

The Alexander Hamilton Garage Co., Inc., Paterson, N. J., has awarded a general contract to the John W. Ferguson Co., Market Street, for a four-story automobile service and repair building, totaling about 100,000 sq. ft., with machine shop, estimated to cost $110,000.

The Board of Directors, Peddie Institute, Hightstown, N. J., is considering the construction of a power house to cost about $50,000, including equipment. R. W. Swetland is head master.

The Public Service Corporation, Public Service Terminal, Newark, is disposing of a preferred stock issue of $11,000,000, a portion of the proceeds to be used for extensions and improvements in power plants and systems. Contract has been awarded to the Westinghouse Electric & Mfg. Co., East Pittsburgh, for eight transformers and accessory equipment, four to be installed at the Essex power station, and the other four at the Marion station. Awards for additional apparatus will be made in the near future.

The Steffens-Amberg Co., 262 Morris Avenue, Newark, manufacturer of saddlery hardware and other metal products, is having plans drawn for a four-story addition, 75 x 100 ft., to be used primarily as a forge shop. It will cost about $42,000. Alfred Peters, 828 Broad Street, is architect.

The Griffin Auxiliary Carburetor Co., New York, has been incorporated with capital stock of $25,000, to manufacture carburetors for automotive service. Plans have not been completed, but manufacturing will be let out on contract and the company will operate an assembling plant. Address care of E. A. McShane, 49 Wall Street.

Barclay & Co. have awarded the John W. Ferguson Co., New York, contract for constructing a power house at Morsemere, N. J.

New England

BOSTON, Nov. 12.

THE machine tool market is slightly more active, but sales for the most part are confined to single machines. The purchase of a 42-in. car wheel borer, a 20-in. and a 16-in. lathe, a 28-in. shaper and a bolt cutter by the Rutland Railroad is the one notable exception the past week. Competition for business is exceptionally keen in this territory. List prices on new tools remain unchanged, but some shading has been done on recent business. Prices often quoted on good conditioned used tools are so far under those made on new equipment that there is little opportunity for the manufacturer of the latter or his representative to interest buyers. That prices on used equipment are lower here than in some other sections of the country is attested by the frequent inquiries from Middle and Far West dealers.

The sale of tools to the Pacific Mills, Boston, for its repair shop, Lyman, S. C., reported last week, involved about 25 tools, including one 36-in. x 24-ft., one 24-in. x 24-ft. and one 16-in. x 16-ft. lathe, one 3-ft. radial drill, one plain milling machine with cone drive, one cutter and reamer grinder, one back geared high-speed crank shaper, one bolt cutter, one floor grinder, one double emery grinder, one 36 x 6-in. power grindstone, one cutting-off machine, one sensitive drill, two pipe machines, one forge, one hand-power swaging machine, one stripping gage, one 12-in. planer, one 26-in. x 8-ft. planer, one sliding top saw table, and various saws for wood working.

The Saco-Lowell Shops, Boston, are inquiring for a fairly large list of equipment, some of which presumably will be purchased this year, and the remainder in 1924. Other manufacturing interests are inquiring for new equipment for 1924 budget purposes. The demand for transmission has materially increased, most inquiries coming from textile mills, following the textile show recently held in Boston.

The plant formerly owned by the Mason Regulator Co., Hyde Park, Boston, has been sold to trustees of the Englander Spring Bed Co., New York, for manufacturing purposes. It contains about 50,000 sq. ft. floor space.

Landers, Frary & Clark, New Britain, cutlery, etc., have awarded contract to the Torrington Building Co., Torrington, Conn. for a six-story addition, work on which will start this month.

Plans have been accepted for the George Sykes manual training school, Rockville, Conn., to cost approximately $300,000 without equipment, money for which will be appropriated this month. The school committee is making up a list of equipment required, including metal and wood working machinery.

The plant of the Oliver Mann & Sons Co., New Boston, Mass., pails, was destroyed by fire last week. Oliver Mann, president, states that a new plant will be erected, work to begin at once.

Bids will be taken this week by the Carr Fastener Co., 31 Ames Street, Cambridge, Mass., for an addition, to contain 16,000 sq. ft.

Check, boiler and basement valves and other equipment are required by the Rinaldi Tile Co., Inc., 263 Atlantic Avenue, Boston, for a three-story, 48 x 105 ft. plant to be erected on Carleton Street, Cambridge, Mass.

Fire recently destroyed the plant of the American Japanning Co., Bedford Road, Woburn, Mass. A new plant will be erected as soon as insurance losses are adjusted. Ovens and other equipment will be required.

The Fuller Gates Co., Hartford, Conn., was recently organized with $50,000 capital stock to manufacture electrical wiring devices and is about ready to begin operations. It will be in the market soon for materials. Fred P. Gates is vice-president.

Manual training equipment will be installed in the new high school to be erected at Franklin, Mass., estimated to cost $200,000. Ritchie, Parsons & Taylor, 15 Ashburton Place, Boston, are architects.

The Warren Foundry, Warren, R. I., has preliminary plans for enlargements, including improvements in the present foundry.

Contract has been awarded by the Stanley Rule & Level Division of the Stanley Works, New Britain, Conn., to the Aberthaw Construction Co., Boston, for a seven-story manufacturing unit, 60 x 140 ft., and a three-story structure, 60 x 200 ft., to cost approximately $175,000.

Manual training equipment will be installed in the new three-story and basement junior high school to be erected at Fall River, Mass., for which bids have been received on a general contract. It will cost approximately $650,000. Nathaniel C. Chase, 47 Borden Building, is architect.

Plans are being drawn for a one-story power house, 60 x 150 ft., at the plant of the Donnelly Brick Co., Berlin, Conn., estimated to cost $42,000. M. J. Unkelbach, Main Street, New Britain, Conn., is architect.

The Textile Finishing Machinery Co., 171 Westminster Street, Providence, has awarded a general contract to the J. A. Maguire Construction Co., Providence, for two additions, one-story, 75 x 120 ft. and two-stories 60 x 110 ft., respectively, to cost $85,000. The latter will be equipped as a roll shop.

The Connley Electric Welding Co., 307 South Water Street, Providence, has filed plans for a new one-story plant on Public Street.

The Municipal Water Department, Middletown, Conn., will build a new pumping plant on Highland Avenue to cost about $42,000.

Manual training equipment will be installed in the new three-story high school to be erected at Stoneham, Mass., estimated to cost $250,000, for which plans are being drawn by Ritchie, Parsons & Taylor, 15 Ashburton Place, Boston, architects.

The Bennet Wire Co., 154 Water Street, Norwalk, Conn., has awarded a contract to Fred M. Hawkins, Norwalk, for a one-story addition.

The Common Council, Willimantic, Conn., is arranging an appropriation for the construction of a municipal ice plant.

The Waterbury Farrel Foundry & Machine Co., Bank Street, Waterbury, Conn., will commence the erection of a one-story addition to its power house, 46 x 52 ft. Westcott & Mapes, New Haven, Conn., are engineers.

Ovens, power equipment, conveying and other machinery will be installed in the three-story plant to be erected at Providence, by the Atlantic Biscuit Co., care of the McCormick Co., 41 Park Row, New York, architect and engineer.

The Board of Education, Waterbury, Conn., is arranging an appropriation for the installation of a manual training department at the Maloney School.

The M. Backes Sons Mfg. Co., Wallingford, Conn., manufacturer of percussion caps, explosives, etc., has awarded a general contract to the Loucks & Clark Co., Wallingford, for a one-story and basement addition, 30 x 130 ft.

Philadelphia

PHILADELPHIA, Nov. 12.

BIDS will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until Nov. 27, for three engine lathes for the Philadelphia Navy Yard, schedule 1567.

Francis B. Beddall, 223 North Sixteenth Street, Philadelphia, operating a machine and welding works, has taken title to property at 762-66 North Uber Street, for the erection of a new machine shop, for which plans will be drawn at once.

The J. G. Brill Co., Sixty-second and Woodland Streets, Philadelphia, manufacturer of railroad and traction cars, trucks, etc., has formed a subsidiary, the Automotive Car Division, for the manufacture of gasoline-driven cars. The new organization has acquired the railroad motor coach division of the Service Motors, Inc., Wabash, Ind., including production rights for the gasoline-driven cars heretofore made by the Service company. Operations will commence at an early date, to include improvements in the works and later expansion. C. O. Guernsey, formerly vice-president of the acquired company, will be chief engineer of the new organization.

The Packard Motor Car Co., 319 Broad Street, Philadelphia, has engaged Philip S. Tyre, 1509 Arch Street, architect, to prepare plans for its four or five story service, repair and headquarters, 200 x 265 ft., at Broad Street and Allegheny Avenue, to cost approximately $600,000.

Fire, Nov. 2, destroyed a portion of the plant of the Federal Steel Foundry Co., foot of Reaney Street, Chester, Pa., with loss estimated at $23,000. The company is a subsidiary of the William Cramp & Sons Ship & Engine Building Co., Philadelphia.

The Remington-Burnelli Aircraft Corporation, 25 West Forty-fifth Street, New York, is having plans drawn for the first unit of its proposed plant on Magazine Lane, Philadelphia, totaling about 15,000 sq. ft., of floor area, and will break ground within the next 60 days. Other units will be built later.

The Philadelphia & Reading Railroad Co., Reading Terminal, Philadelphia, will make enlargements in its steam power plant in the Port Richmond section, including the installation of additional equipment, to cost approximately $600,000.

The American Meter Co., Seventeenth and Clearfield Streets, Philadelphia, manufacturer of gas meters, etc., has awarded contract to the A. Raymond Raff Co., 1635 Thompson Street, for an addition in the rear of 3110 North Seventeenth Street, to cost about $21,000.

A machine and mechanical department will be installed in the new building to be erected by the Bell Telephone Co., Chester, Pa., estimated to cost $50,000.

R. Van Horn, 4929 Catherine Street, Philadelphia, and associates, have organized the French Creek, Sugar Creek and Sandy Creek Township Power Corporations, to install and operate plants and systems in the respective territories. The Greenfield Township Power Co. will also be formed by the same interests to operate in the vicinity for which named.

The Congoleum Co., Trainer, near Chester, Pa., has acquired about 20 acres in the vicinity of its works for about $50,000, and plans the erection of a new paper mill, to cost more than $200,000 with machinery.

The Rowland Shovel Co., Central Avenue and Ashbourne Street, Cheltenham, Pa., operated by the Ames Shovel & Tool Co., Boston, is having plans drawn for rebuilding the portion of its plant and power house recently destroyed by fire. L. Rose, Jr., is general manager.

The Vulcanite Portland Cement Co., Land Title Building, Philadelphia, with plant at Vulcanite, N. J., is disposing of a bond issue of $600,000, a large part of the proceeds to be used for the installation of additional equipment, on which work has been commenced. It is expected to provide new machinery to effect a saving of about $100,000 per annum in operation. John B. Lober is president.

The Johnson Bronze Co., New Castle, Pa., manufacturer of bronze bushings, etc., has awarded a general contract to the Truscon Steel Co., Youngstown, Ohio, for an addition to manufacture bushings under a special process. Equipment will be installed for about 75 operatives.

The Quality Tool Corporation, New Wilmington, Pa., recently organized by local interests, is planning the establishment of a factory to manufacture tools and mechanical equipment.

The Klein Motor Co., Easton, Pa., care of Lohr & Kennard, 315 Brodhead Street, architects, is taking bids on a general contract for a two-story service and repair building, 140 x 140 ft., on Butler Street, estimated to cost $70,000 with equipment.

The Pennsylvania Engineering Works, New Castle, Pa., manufacturers of iron and steel castings, etc. has tentative plans for extensions and the installation of additional equipment. Arrangements are being made for an increase in capital from $1,000,000 to $1,800,000.

The Jordan Coal Co., Scranton, Pa., has secured a lease of anthracite coal properties near Pottsville, Pa., and plans the construction of a coal breaker to cost approximately $200,000. Electric power and other equipment will also be installed. P. R. Jordan is head.

The Erie Railroad Co., 50 Church Street, New York, is said to have tentative plans under consideration for extensions in its shops at Susquehanna, Pa., with the installation of additional equipment.

The Watts Water Power Co., and the Juniata Water Power Co., Juniata, Pa., recently organized by Col. S. W. Fleming and Farley Gannett, and associates, Harrisburg, Pa., are planning the construction of a power plant in the vicinity of Millerstown. Pa.

Manual training equipment will be installed in the new West End junior high school to be erected at Lancaster, Pa., for which foundations will be laid at once, estimated to cost $556,000, with equipment.

Officials of the Middletown & Swatara Consolidated Water Co., Middletown, Pa., are arranging for a reorganization of the company under the name of the Middletown & Royalton Water Co., to include the issue of bonds for $225,000, a portion of the proceeds to be used for the installation of a new pumping plant and other equipment.

The Panther Valley Mining Co., Weatherly, Pa., operating coal properties in the Quakake Valley section, has tentative plans for the installation of a tipple and other colliery buildings. Pumping machinery and other operating equipment wil also be installed.

Buffalo

BUFFALO, Nov. 12.

AN appropriation of about $400,000 is being arranged by the Atlas Crucible Steel Corporation, Dunkirk, N. Y., for extensions and additional equipment.

The Niagara Falls Power Co., Niagara Falls, N. Y., will install a 70,000-hp. turbine-generator at its hydroelectric power plant, with auxiliary machinery, supplementing a similar unit now being installed, and will make other extensions. The two turbines were constructed by the William Cramp & Sons Ship & Engine Building Co., Philadelphia.

The Common Council, Herkimer, N. Y., is planning the installation of additional equipment at the steam-operated municipal electric plant, to cost about $75,000.

The Pratt & Letchworth Co., 189 Tonawanda Street, Buffalo, manufacturer of iron and steel castings, has awarded a general contract to the Hunkin-Conkey Construction Co., Cleveland, for two one-story additions, 70 x 210 ft., and 50 x 120 ft., to cost $80,000.

The Board of Trustees, St. Joseph's Hospital, Syracuse, N. Y., has authorized plans for a new power house to cost approximately $150,000 including equipment. Goggin & Goggin, University Building, are architects.

The City Council, Canandaigua, N. Y., will hold in abeyance plans for the proposed municipal electric plant, estimated to cost $100,000 with machinery, and will secure service from the Rochester Gas & Electric Corporation.

Fisher & Payne, Carter Alley, Geneva, N. Y., manufacturers of automobile bodies, are planning the erection of new works on West Hamilton Street.

The C. H. Lovejoy Chaplet Co., Inc., Hoosick Falls, N. Y., plans the installation of a number of automatic screw machines.

Manual training equipment will be installed in the new high school to be erected at Nunda, N. Y., estimated to cost $150,000, for which plans are being prepared by Randall & Vedder, S. A. & K. Building, Syracuse, N. Y., architects.

The City Council, Gouverneur, N. Y., is arranging an appropriation of about $100,000 for the construction of a municipal electric light and power plant.

The Wickwire-Spencer Steel Corporation, River Road, Buffalo, has awarded contract to the W. G. Hudson Corporation, 50 Church Street, New York, for the construction of a new briquetting plant, to cost $80,000.

The Northern New York Utilities, Inc., Watertown, N. Y., and its affiliated interest, the Power Corporation of New York, have acquired the Rome Gas, Electric Light & Power Co., Rome, N. Y., heretofore controlled by the National Gas, Electric Light & Power Co., Philadelphia. The new owner plans extensions and will merge the property with its present system.

The Tonawanda Iron Corporation, North Tonawanda, N. Y., will install hoisting, conveying and other machinery on its new dock, for which a contract has been awarded to the Empire Engineering Co., River Road. It is estimated to cost $200,000.

The Flint Cold Storage Co., Flint, N. Y., has tentative plans for a new ice and coal storage plant, estimated to cost $150,000 with equipment. T. D. Whitney, Flint, is president.

Manual training equipment will be installed in the proposed two-story and basement high school to be erected at Sherbourne, N. Y., estimated to cost $130,000, for which foundations will be laid at once. J. Mills Platt, Cutler Building, Rochester, N. Y., is architect.

The Rochester Boiler & Tank Co., 217 North Water Street, Rochester, N. Y., has tentative plans for enlargements and the installation of additional equipment. D. F. Murray is president.

The Precision Casting Co., Syracuse, N. Y., is in the market for a punch press, preferably Bliss No. 18, 19 or 20, with dial feed and 3 or 3½-in. stroke of slide.

Pittsburgh

PITTSBURGH, Nov. 12.

CHEERFULNESS in the local machine tool trade is sustained more by the large amount of business that has been quoted against than by the number of orders recently placed. Revival of a crane inquiry from the Dillon Brothers Machine Co., Wheeling, W. Va., which is to build a new forge plant, encourages expectations of purchases of tools and the Guibert Steel Co., Diamond Bank Building, Pittsburgh, which built a fabricating plant the past year, is expected to buy tools before long. The National Tube Co., Frick Building, Pittsburgh, has an inquiry out for a shaper, lathe and drill press for its Riverside works, Benwood (Wheeling, W. Va.), and also is understood to be making plans for new construction at its Christy Park works, McKeesport, Pa. The Pennsylvania Railroad has not yet closed against the several tools it inquired for a few weeks ago for its Mingo Junction, Ohio, car repair shops.

The Riter-Conley Co., Oliver Building, Pittsburgh, recently bought a planing and upsetting machine of special design from the Birdsboro Foundry & Machine Co. The Riter-Conley Co. does the fabricating of large outside diameter lockbar pipe and the purchase of this machine was necessary in connection with the order for the Bull Run water pipe line for Portland, Ore., recently placed through T. A. Gillespie, New York.

Tentative plans are being considered by the Corrado Coal & Coke Co., Dawson, Pa., for rebuilding the portion of the tipple and power house recently destroyed by fire. The plant was recently purchased from the W. J. Rainey Coal & Coke Co.

The Pittsburgh Auto Equipment Co., 5933 Baum Boulevard, Pittsburgh, is taking bids for a five-story and basement works, 60 x 115 ft., to cost $85,000. The Hunting-Davis Co., Century Building, is architect.

Fire, Nov. 4, destroyed a portion of the general repair shop, 50 x 200 ft., at the locomotive works of the Pennsylvania Railroad Co., Pitcairm, Pa., with loss estimated at $25,000. It is planned to rebuild.

Electric power equipment, conveying apparatus, presses, etc., will be installed in the addition, 35 x 127 ft., to be erected by the Potomac Pottery Co., Inc., Keyser, W. Va., manufacturer of sanitary ware, for which a general contract has been let to the T. P. Lilles Co., Keyser. Frederick C. Buford is president.

The Virginian Power Co., Charleston, W. Va., is arranging an extension rogram to cost about $2,000,000. Plans include the construction of a new hydroelectric power house at the mouth of Cabin Creek and the installation of additional steam power equipment at other stations, with coal-handling and storage equipment and auxiliary apparatus.

The G. M. Johnson Mfg. Co., Jeannette, Pa., manufacturer of mining machinery, mine-safety apparatus, etc., has tentative plans for a new one-story building, 40 x 140 ft., to replace the portion of its plant recently destroyed by fire with loss of about $55,000.

R. W. Russell, St. Marys, W. Va., has inquiries out for one 300 to 350-hp. gas-operated engine, with one 200-kw. alternator, and auxiliary equipment; also for two 40-hp. gas engines.

Bids will be received by the city clerk, Keyser, W. Va., until Dec. 12, for centrifugal pumping machinery, booster pumping plant, water tank and tower, and other auxiliary equipment for a waterworks plant. The J. N. Chester Engineers, Inc., Union Bank Building, Pittsburgh, is engineer. E. V. Romig is mayor.

The Pittsburgh & West Virginia Railway Co., Wabash Building, Pittsburgh, has completed plans for a two-story steam-operated power plant, 48 x 100 ft., at Rook, near Pittsburgh. Crecelius & Phillips, Hanna Building, Cleveland, are engineers.

Manual training departments will be installed in the two-story and basement high school to be erected at Indiana, Pa., estimated to cost $350,000, for which bids will be received on a general contract until Dec. 1. Thayer & Johnson, 39 North Jefferson Street, New Castle, Pa., are architects.

The West Penn-West Virginia Water Power Co., Pittsburgh, a subsidiary of the West Penn Power Co., West Penn Building, has plans for a new power house in Wharton Township, Fayette County.

Fire, Nov. 6, caused by an explosion, destroyed the plant, power house and equipment of the Raleigh Wyoming Coal Co., Glen Rogers, Wyoming County, W. Va., with loss of $350,000.

Machine shops and manual training departments will be installed in the new Lincoln junior high school and Douglas junior high school, to be erected at Huntington, W. Va., by the Huntington Independent District Board of Education, estimated to cost $375,000. R. N. Bates, 416 Eleventh Street, is architect for the former, and W. F. Diehl, Robson-Pritchard Building, architect for the other. Bids will be received on general contracts until Nov. 26.

The Park Way Welding Co., 100 West Park Way, Northside, Pittsburgh, is planning for the installation of a rotary shear, bending rolls and other equipment.

T. N. Gummert, Tarentum, Pa., is organizing a company to build a local glass manufacturing plant. The initial unit is expected to cost about $1,000,000 including power house.

The Faris Construction Co., Sutton, W. Va., has inquiries out for an air compressor. J. W. Johnson is president.

The Willetts Clay Co., Fairmont, W. Va., manufacturer of glass pots and kindred specialties, has tentative plans for rebuilding the portion of its plant recently destroyed by fire with loss of $200,000 including machinery.

Hoisting, conveying and other material-handling machinery will be installed in the proposed freight house to be erected by the Pittsburgh Railways Co., Pittsburgh, estimated to cost $450,000.

The Pittsburgh & Lake Erie Railroad Co., Terminal Building, Pittsburgh, has awarded a general contract to W. F. Trimble & Son, 1719 Penn Avenue, for the construction of a one-story engine house, with repair facilities, 35 x 135 ft., at McKees Rocks, Pa., to cost about $35,000. A. R. Raymer is chief engineer.

Detroit

DETROIT, Nov. 12.

BIDS are being asked by the Mueller Metals Co., Port Huron, Mich., manufacturer of castings and forgings, for a one-story forge shop, 50 x 150 ft., at St. Clair, Mich., to cost about $30,000. Walter H. Wyeth, 314 Sperry Building, Port Huron, is architect. Oscar B. Mueller is president.

The Detroit Concrete Receptacle Co., 4225-27 Michigan Avenue, Detroit, has engaged Stratton, Snyder & Bauer, 1103 Union Trust Building, architects, to prepare plans for its new one-story plant on the Woodward Heights Boulevard, estimated to cost $250,000, including machinery. Bids will be asked early next year.

Fire, Nov. 3, destroyed a portion of the plant of the Soo Handle & Enameling Co., Sault Ste. Marie, Mich., with loss estimated at $30,000, including equipment. It is planned to rebuild.

The Valley Paper Co., Press Building, Kalamazoo, Mich., has authorized plans for a new mill, with power house and water filtration plant, to cost approximately $500,000 with machinery. Billingham & Cobb, Press Building, are architects.

The Kalamazoo Ice & Fuel Co., Kalamazoo, Mich., has commenced the construction of a new coal-handling plant, 150 x 160 ft. Electric power and mechanical handling machinery will be installed.

The Borg & Beck Co., 920 South Michigan Avenue, Chicago, manufacturer of automobile clutches, etc., has acquired the plant and business of the Automotive Parts Co., Detroit, with branches at Toledo, Ohio, and Grand Rapids, Mich. Extensions are planned. George W. Borg is head.

The Michigan College of Mines, Houghton, Mich., has plans in preparation for the erection of a four-story and basement metallurgical building, 120 x 120 ft., to cost about $350,000 with equipment. Lynn W. Fry, Ann Arbor, Mich., is architect.

The Cadillac Motor Car Co., 2060 Clark Street, Detroit, is taking bids for superstructure work for its new foundry buildings, to cost about $1,200,000 with equipment. The Austin Co., Penobscot Building, is architect.

The Kawneer Mfg. Co., Niles, Mich., manufacturer of metal store fronts, metal sash, etc., has awarded a general contract to Robert L. Reisinger & Co., Milwaukee, for its three-story and basement addition, 50 x 100 ft., estimated to cost $75,000.

A machine and repair shop will be installed in the three-story and basement automobile service building, 75 x 122 ft., to be erected by E. G. Davith and E. W. Cork, Marquette, Mich., for which a general contract has been let to the Wisconsin Engineering & Construction Co., Wausau, Wis., estimated to cost $80,000.

The foundry of the Bostick Stove Co., Lapeer, Mich., maker of castings, was completely destroyed by fire on Oct. 26. Construction of a new building has been started and the company plans to be in production again by Dec. 1.

The Williamston Clay Products Co., Williamston, Mich., recently organized, is arranging for the erection of a plant to manufacture tile and kindred products. It will include a power house. J. E. Meyer and George F. Skelton head the company.

Cleveland

CLEVELAND, Nov. 12.

WITH an increase in inquiries, the local machine tool market shows some improvement and as a result there is a better feeling among the trade. Dealers are doing a fair volume of business in single machines and one lot of 7 or 8 machines will probably be placed by a local manufacturer this week. The New York Central Railroad has an inquiry out for a turret lathe, but has not yet made purchases against its recent list. There seems to be a lull in buying by automobile companies and no orders of any size are reported from Detroit car builders. Inquiry for automatic screw machines in small lots shows considerable increase. A Cleveland manufacturer has taken an order from a Chicago company for three automatic machines.

A typographical error in these columns last week, made it appear that the United Ejector Co., Boston, had purchased 60 turret lathes from a Cleveland manufacturer. The order was for six turret lathes, and the correct name of the company is the United Injector Co.

The Globe Brass Mfg. Co., 2925 East Fifty-fifth Street, Cleveland, will enlarge its plant by the erection of a building providing 1500 sq. ft. of floor space to be used for machine shop and foundry purposes.

The Timken Roller Bearing Co., Canton, Ohio, is preparing to expend $750,000 for extensions and equipment. Plans provide for the erection of several two-story factory buildings, the largest of which will be 200 x 300 ft.

The Ohio Iron Works Co., Cleveland, has been organized with a capital stock of $25,000 to fabricate steel and ornamental iron work and has leased a plant at 4300 Perkins Avenue. James Morgan, formerly general superintendent of the Variety Iron Works Co., Cleveland, is president and Albert E. Smith, formerly general superintendent of the King Bridge Co., Cleveland, is vice-president.

The Cleveland Railway Co. is planning the erection of six substations in Cleveland and the suburbs, to cost approximately $35,000.

The Ransom & Randolph Co., Toledo, Ohio, manufacturers of dental supplies, has placed contract for a three-story reinforcing concrete factory, 80 x 190 ft.

The Ohio Valley Clay Products Co., which recently incorporated with a capital stock of $360,000, will shortly begin the erection of a plant at Port Homer, near Steubenville for the manufacture of sewer pipe and building material. It will be four-stories 160 x 200 ft.

The Federal Collieries Co., Uhrichsville, Ohio, will short-

ly begin the erection of a plant to make sewer pipe at an estimated cost of $300,000.

The Metropolitan Steel Co., which recently acquired a plant in Mineral Ridge, Ohio, expects to place it in operation for the manufacture of refrigerators about Jan. 1.

The Toledo-Chevrolet Motor Co., Toledo, Ohio, has awarded contract to the Gettins-Kopike Co., Toledo, for a one-story addition, 130 x 200 ft., to cost about $95,000. Mills, Rhines, Bellman & Nordhoff, Ohio Building, Toledo, are architects.

The National Ice Co., Mansfield, Ohio, will commence the erection of a new one-story ice-manufacturing plant to cost about $50,000, for which a building contract has been let to Snell & Wolff, Mansfield.

The Humphrey Mfg. Co., 201 East Fifth Street, Mansfield, Ohio, is considering the erection of a new one-story foundry. W. G. Moore is president.

The Detroit, Toledo & Ironton Railroad Co., Detroit, operated by the Henry Ford interests, has tentative plans for the construction of new locomotive and car repair shops at Lima, Ohio, in connection with a large terminal yard.

Chicago

CHICAGO, Nov. 12.

THE chief development in the market is an appreciable expansion in inquiry from industrial sources. The A. O. Smith Corporation, Milwaukee, has put out a list of 48 items. The Pullman Co., Chicago, is in the market for a 2-in. forging machine and a number of other tools. In addition, smaller industrial inquiries are increasingly numerous. The Burlington has distributed formal orders for approximately 90 per cent of the items on its list. The Illinois Central has purchased a 2½-in. bolt cutter, an 18-in. lathe, a 20-in. upright drill, a coach wheel lathe, and a motor-driven hammer.

The Sante Fe has appropriated $3,400,000 for shop extensions, new machinery and other equipment at San Bernardino, Cal. Of this sum, over $900,000 is for a machine shop, 90 x 637 ft., which will replace the present structure, more than doubling the capacity. The boiler and tank shop will be replaced with a new boiler shop, 164 x 675 ft., at a cost of $850,000. The outlay for machinery and tools will be over $900,000. Construction will begin on the various units as soon as contracts can be let. Inquiries for the machine tools have not yet been issued, but action has already been taken toward the purchase of cranes. One of the electric cranes to be bought will be 300 tons capacity.

The Consolidated Machine Tool Corporation contemplates giving up its store and show rooms at 547 West Washington Boulevard, Chicago, in which event it will probably lease office space elsewhere in the Chicago machinery district. Two other prominent machine tool houses are also considering the abandonment of their stores. If such action is taken it will mark a radical change in merchandising methods at Chicago. In New York, practically all machine tool merchants limit themselves to office space, but in this city, the practice for years has been to maintain stores where machine tools are exhibited for inspection by prospective customers.

A. O. Smith Corporation List

One 12-in. x 6-ft. engine lathe.
One 16-in. x 6-ft. engine lathe.
One 18-in. x 6-ft. engine lathe.
One 20-in. x 10-ft. engine lathe.
One 24-in. x 12-ft. engine lathe.
One 26-in. x 12-ft. engine lathe.
One 30-in. x 26-ft. engine lathe.
One 36-in. x 16-ft. engine lathe.
One 36-in. x 28-ft. engine lathe.
One 48-in. x 24-ft. engine lathe.
One No. 2B Kearney & Trecker, or equivalent, milling machine.
One No. 3 Kearney & Trecker, or equivalent, milling machine.
One No. 3B Kearney & Trecker, or equivalent, milling machine.
One No. 4 Cincinnati, or equivalent, milling machine.
One No. 5 Cincinnati, or equivalent, milling machine.
One 36 x 36-in. x 12-ft. planer.
One 42 x 42-in. x 12-ft. planer.
One 60 x 60-in. x 18-ft. planer.
One 72 x 72-in. x 20-ft. planer.
One 72 x 72-in. x 36-ft. planer.
One 8 x 32-in. grinding machine.
One 12 x 48-in. grinding machine.
One No. 106 Rivett, or equal, grinding machine.
One No. 70 Heald, or equal, grinding machine.
One No. 2 Brown & Sharpe, or equal, surface grinding machine.
One Ransom, or equal, wet grinder, with 24 x 1½-in. wheel.
One U. S. Electric Tool Co., or equal, floor grinder, with 20 x 2-in. wheel.
One No. 31 Lucas, or equal, horizontal boring mill.
One No. 32 Lucas, or equal, horizontal boring mill.
One No. 33 Lucas, or equal, horizontal boring mill.
One No. 4 Gisholt, or equal, horizontal boring mill.
One 4-ft. plain radial drill.
One 4-ft. universal radial drill.
One 5-ft. plain radial drill.
One 5-ft. universal radial drill.
One 15-in. slotter.
One 22-in. slotter.
One 20-in. shaper.
One 24-in. shaper.
One 20-in. upright drilling machine.
One 24-in. upright drilling machine.
One 30 or 32-in. upright drilling machine.
One 36-in. sliding head upright drilling machine.
One No. 33 Kempsmith milling machine, or equivalent.
One ½-in. sensitive drill with 12-in. overhang.
One ¾-in. sensitive drill with 16-in. overhang.
One 400-ton hydraulic press with 96 in. between strain bars and 8 ft. long inclusive.
One straightening press to take 4 to 5-in. rods.

The Whiting Corporation, Chicago, has taken the following orders for foundry equipment: No. 10 cupola for the Southern Wheel Co., Birmingham; No. 10 cupola for the Leonard & Baker Stove Co., Taunton Mass.; an 18 x 60-in. and a 33 x 60-in. tumbler for the Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.; two 36 x 60-in. tumbling barrels for the Marshall Furnace Co., Marshall, Mich.; a 36 x 60-in. tumbler for the Auto Specialties Mfg. Co., St. Joseph Mich.; a 3000-lb. pneumatic elevator for the Bostwick Stove Co., Lapere, Mich.

The Wonder Truck & Tractor Co., recently incorporated, with general offices in the Security Building, St. Louis, and plant at 917 East Broadway, Alton, Ill., will manufacture light-four gasoline-driven tractors and road builders. The plant is fully equipped for the present. Officers are William Savidge, president; William M. Edinger, vice-president; R. H. Dalby, secretary; Lucas Haefner, treasurer, and Charles F. Meier, general manager.

The Hi-Lo Products Co., Monadnock Block, Chicago, recently incorporated, is not a manufacturing organization, but will confine its activities to the merchandising of the products of the Hi-Lo Fan Co. of the same address. Officers are F. M. Schieble, president and treasurer; W. Phinny, vice-president, and Philip McGuire, secretary.

The Crane Co., Chicago, plans to erect several additional units at its works at Kedzie Boulevard and Pershing Road. The first building will probably be another foundry unit, to cost $1,000,000, plans for which are said to have been drawn by Holabird & Roche, architects, Chicago. Plans for other additions are still in the formative stage.

The Wolverine Bumper & Specialty Co., Grand Rapids, Mich., has awarded contracts for the construction of a plant at Broadway and Alpine Streets, to cost $42,000.

George Donnersberger, president Streator Car Co., 80 East Jackson Boulevard, Chicago, has purchased the plant and property formerly occupied by the N. K. Fairbank Co. at Eighteenth Street and Wentworth Avenue.

O. D. Jennings & Co., manufacturers of coin machines, 515 South Peoria Street, Chicago, have purchased at auction the two-story and basement factory of the Garbell Typewriter Corporation, 4309-39 Lake Street, and will occupy it for manufacturing purposes.

The Garden City Auto Works, 3150 Archer Avenue, Chicago, is having plans prepared for a one-story rear addition, 50 x 84 ft., to cost $20,000.

The Robbins Mfg. Co., manufacturer of window and door screens, 1801 North Central Park Avenue, Chicago, has had plans prepared for a two-story addition, 50 x 60 ft., to cost $50,000.

The Iowa Railway & Light Co. has awarded contracts for an addition to its power plant at Cedar Rapids, Iowa, to cost $365,000. It will be 45 x 100 ft. and the equipment will include a 10,000-kw. steam turbine.

The Federal Stamping Co. will complete a new plant at Holland, Mich., by Jan. 1.

The Maytag Co., North Fourth Avenue, Newton, Iowa, manufacturer of electric washing machines, agricultural implements, etc., is considering preliminary plans for an addition to cost $200,000. The larger part of the structure will be equipped as a foundry for aluminum casting production. L. B. Maytag is president.

A machine shop and manual training department will be installed in the three-story junior and senior high school to be erected at Wymore, Neb., estimated to cost $200,000, for which foundations will soon be laid. Fiske & McGinnis, Bankers' Life Building, Lincoln, Neb., are architects.

The Crookston Lumber Co., Kelliher, Minn., has tentative plans for rebuilding the portion of its mechanical shop department, recently destroyed by fire with loss of $60,000.

The Tinners' Machine Works, 30 South Clinton Street, Chicago, is planning for the installation of a number of punch presses.

The West Side Ice Co., 839 North Hoyne Avenue, Chicago, has plans for a one and two-story ice-manufacturing plant, 100 x 125 ft. C. G. McClellan, 7441 Cottage Grove Avenue, is architect.

The Northwestern Davenport Cement Block Co., Davenport, Iowa, is having plans drawn for a two-story factory 72 x 75 ft., on West Locust Street. A. H. Ebeling, 818 Mahl Building, is architect.

The Michaelman Steel Co., Quincy, Ill., has awarded contract to Buerkin & Buerkin, 721 Main Street, for a three and four-story addition, estimated to cost $50,000.

The Ford Motor Co., Highland Park, Detroit, has awarded a general contract to the Villadsen Brothers Co., Dooly Building, Salt Lake City, Utah, for its new local assembling plant on Third Street, South, two-stories, 165 x 250 ft., estimated to cost $250,000.

Matthew Fitzpatrick, Union National Bank Building, Rochester, Minn., is organizing a company to build an ice and cold storage plant, to cost $200,000 with equipment.

Milwaukee

MILWAUKEE, Nov. 12.

IN general, demand for machine tools is limited to urgent needs and considerable shopping is being done to get equipment at the lowest cost possible. In many instances a used tool is taken in preference to new as a matter of first-cost economy. There is a moderate call for special types of tools for special production as well as tool room purposes, but in view of the slack demand for standard types, business is hardly satisfactory. Local shops have received little railroad business so far, but indications are that the distribution of orders will eventually affect this market favorably.

The Vilter Mfg. Co., 935 Clinton Street, Milwaukee, manufacturer of ice and refrigerating machinery, Corliss engines, etc., has placed contracts for a one-story brick and steel pipe shop, 90 x 124 ft., which will require some equipment of a miscellaneous character. Emil O. Vilter is president and general manager.

L. M. Turner, formerly president Turner Mfg. Co., Port Washington, Wis., gas engines and tractors, in bankruptcy, has arranged to resume the production of gas engines through the E. & W. Mfg. Co., Cedarburg, Wis., manufacturer of contractors' equipment, trailers, etc. The Badger-Packard Machinery Co., Milwaukee, which purchased the Turner assets at receiver's sale, has disposed of the gas engine patterns, fixtures, etc., to Mr. Turner, who is now connected with the E. & W. Mfg. Co. Additional equipment required by the Cedarburg concern for the new line has been acquired from the Badger-Packard holdings of Turner machinery.

The Swanson Toy Blocks Units of Chicago, organized with $250,000 in Illinois as a common trust estate, has leased the building at Oconto, Wis., erected several years ago for the Montana Tractor Co., and is retooling it for the production of wood and metal toy blocks, toys, novelties, ornaments, etc. Operations will begin Dec. 1. G. A. Swanson is president and general manager.

W. H. Ludwig, 501 South Central Avenue, Marshfield, Wis., has engaged W. L. Alban, architect, St. Paul, Minn., to design a two-story garage and service building, 50 x 120 ft., to be built early next spring. Only the first story and basement will be erected for the present. The cost is estimated at $25,000.

The Riverside Fibre & Paper Co., Appleton, Wis., which is spending about $450,000 in enlarging its mills and power plant, has decided to add a complete filtration plant costing about $50,000. Pumps, traveling screens, etc., are now being purchased.

The Shellmar Products Co., Milwaukee, has let the general contract to the Austin Co., 208 South LaSalle Street, Chicago, for a new printing plant, 82 x 148 ft., to cost about $75,000. Printing machinery has been placed with the Claybourn Process Corporation, Milwaukee. K. L. Shellaberger is president and general manager.

The Atlantic & Pacific Products Co., subsidiary of the A. & P. Stores system, will enlarge its milk condensing plant at West Bend, Wis., at a cost of $75,000, by a one-story addition, 100 x 172 ft., and a power house extension, 30 x 90 ft. Additional generating equipment, boilers, special machinery and other equipment will be required. H. M. Clark is local manager.

The Milwaukee department of public works is asking bids until Nov. 19 for furnishing and installing in the new Riverside pumping station a complete two-pipe low pressure steam supply and vacuum return system of steam heating. At the same time bids will be taken for a 20-ton auto truck scale for a second time, original tenders being unsatisfactory. R. E. Stoelting is commissioner.

The American Brass Co., Kenosha, Wis., subsidiary of the Anaconda Copper Co., will proceed with plans for the construction of an addition, 220 x [illegible] ft., one-story, to be equipped as a wire drawing mill. The extension was projected about a year ago and is now being revived. The cost of the work is estimated at $250,000.

The Scovill Mfg. Co., Waterbury, Conn., is reported to be planning to transfer its vacuum cleaner manufacturing department to the plant of the Hamilton-Beach Mfg. Co. of Racine, Wis., which recently was sold to Scovill interests. The transfer, it is stated, will not involve appreciable enlargement of the Racine works, nor the purchase of much additional equipment.

The Call Mining Co., Platteville, Wis., has been incorporated with an authorized capital of $100,000 to engage in lead, zinc and spelter mining in the southwestern Wisconsin field. The incorporators are E. E. Bruns, N. J. Gibbons and I. J. Torson. It is understood an idle mining property has been taken over and will be rehabilitated and equipped, but no definite details are available at present.

Cincinnati

CINCINNATI, Nov. 12.

WHILE orders for machine tools have not been plentiful the past week, inquiries continue in good volume, though large lists are not in evidence. The Baltimore & Ohio Railroad has added three tools to its list issued several weeks ago. The Fairbanks, Morse Co. is in the market for tools for its Indianapolis plant, and many other inquiries for one and two machines are being figured on. The Packard Motor Car Co. has been a purchaser of gear hobbers during the week. The Burlington has also placed an order for 25 lathes, a local manufacturer getting part of the business. A nearby lathe manufacturer reports the receipt of an order for seven tools. The American Steel & Wire Co. also purchased equipment in this market. Local dealers report a fair demand for small tools, and used machinery is also showing an improved tone.

While little Japanese business had been placed as yet, indications are that large orders from this source will be forthcoming soon after the first of the year. An inquiry from China for a number of lathes has been received.

The Bourne-Fuller Co., Cleveland, is preparing plans for an addition, of steel construction, 90 x 240 ft., to its Cincinnati warehouse. A 90-ft. span electric traveling crane will be installed.

The Sawbrook Steel Castings Co., Cincinnati, recently incorporated, will erect a local plant with a capacity of about 150 tons of steel castings per month, using a 1½-ton electric furnace. Construction work and the purchase of equipment will start immediately. The officers are E. S. Sawtelle, president; A. E. Anderson, vice-president, and E. L. Brooks, secretary-treasurer. The address of the company is Station P., Cincinnati.

The Anderson Body Co., Sidney, Ohio, recently incorporated, will manufacture closed bodies for automobiles, later on engaging in the manufacture of mill work, though the automobile body department will be continued as the principal product. The plant will have a capacity of 50 bodies per day. It has been completely equipped and no extensions are contemplated at present. W. P. Anderson is vice-president and general manager.

The municipal power and water works plant at Mt. Sterling, Ohio, was destroyed by fire Nov. 5, entailing a loss of $50,000. It will be rebuilt as soon as possible.

The Standard Sanitary Mfg. Co., Louisville, Ky., is having plans prepared for an addition to its Louisville plant to cost $1,500,000. It will be used as a brass foundry and manufacturing building. Work of clearing the site is expected to begin immediately, and construction work will start about Jan. 1.

The Elam Paper Co., Marion, Ind., is planning to move to Dayton, Ohio, and has selected a site on which it will erect a one-story manufacturing building. It manufactures writing papers. Virgil Schaeffer, Dayton attorney, is handling the affairs of the company in Dayton.

The Uniflow Pump & Mfg. Co., Dayton, recently incorporated, will manufacture water systems. The company has not yet selected a site for a plant which it proposes to erect. Harry G. Wagner is president of the company, J. A. Snider, vice-president, and John Westendorf, treasurer.

The Art Brick & Construction Co., Zanesville, Ohio, recently organized, has plans for a new two-story plant at Licking View for the manufacture of concrete bricks and blocks, estimated to cost $45,000. Guy H. Blackburn, general manager, is in charge.

The Board of Trustees, Ohio University, Athens, Ohio, has tentative plans for a two-story and basement manual training and engineering building to cost approximately $200,000.

The Gulf States

BIRMINGHAM, Nov. 12.

INQUIRIES are being made by the Homewood Timber Co., Mobile, Ala., for a logging locomotive.

H. W. Dexter, P. O. Box 665, Jacksonville, Fla., machinery dealer, has inquiries out for a 100-hp., slide-valve, stationary engine, standard-gage car trucks for logging car service and one 60 or 75 Scotch marine boiler and auxiliary equipment.

The Pierce Oil Corporation, 25 Broad Street, New York, is arranging an appropriation of $4,000,000 for extensions and improvements in its oil properties, including refineries at Texas City and Forth Worth, Tex., where additional machinery will be installed. It is expected to commence work early next year. Frank Coverdale is chairman of the board.

The Common Council, Saint Francisville, La., is planning to rebuild the municipal power plant and pumping station recently damaged by fire with loss of $25,000, including equipment.

The Decatur Cornice & Roofing Co., Decatur, Ala., will rebuild by day labor the portion of its plant recently destroyed by fire with loss of $55,000. Additional equipment will be installed. Henry R. Davis is secretary.

The Missouri-Kansas-Texas Railroad, St. Louis, has awarded a general contract to H. D. McCoy, Clebourne, Tex., for an addition to its car shops at Denison, Tex., estimated to cost $200,000, including equipment. Other units will be erected later.

The Perfection Plow Co., 3 Hampton Building, Tampa, Fla., recently organized, will defer the establishment of a local plant, and arrangements will be made for the manufacture of equipment in outside shops. J. O. Andress is general manager.

The Compress Buckle Co., Memphis, Tenn., recently organized, has tentative plans for a new plant at Attalla, Ala., to manufacture steel cotton tie buckles and other equipment, estimated to cost $200,000 with machinery.

The Texas-Tapico Rubber Co., 408 West Weatherford Street, Fort Worth, Tex., has leased two local buildings, 60 x 300 ft. and 60 x 200 ft., for the manufacture of hard rubber products, automobile tires, etc. The company was organized recently with W. H. Beard, president, and J. M. Dunning, secretary and treasurer. E. C. Miller will be plant superintendent.

The Galveston, Harrisburg & San Antonio Railway Co., San Antonio, Tex., operated by the Southern Pacific Railroad Co., will commence extensions at its local shops to cost about $80,000, including equipment.

The Gulf Concrete Pipe Co., Houston, Tex., is arranging for the erection of a new two-story plant to cost $25,000. N. A. Eppes is president.

The Continental Turpentine & Rosin Corporation, Laurel, Miss., is planning to rebuild the portion of its power house recently destroyed by fire. Additional equipment will be installed.

The Western Public Service Co., Navasota, Tex., is planning for extensions in its power plant and ice-manufacturing works to cost $40,000. New equipment will be installed. Paul Freeman is division superintendent in charge.

The Louisiana Oxygen Co., Washington Avenue and Rendon Street, New Orleans, has work nearing completion on a new plant to cost $200,000, including machinery.

The Anniston Ice & Coal Co., Anniston, Ala., recently organized, is planning the erection of a new ice-manufacturing plant to cost $50,000, with machinery. C. A. Hamilton is vice-president.

The Board of Works, Port Arthur, Tex., is planning to install additional pumping machinery at the municipal stations in the Port Arthur Heights section, Shreveport Avenue and on Nineteenth Street. They will have a combined capacity of about 135,000 gal. per minute and will be electrically operated.

The Rushton Corporation, Fairfield, Ala., contemplates the construction of a new ice-manufacturing and refrigerating plant to cost $150,000, including machinery.

The Brown Welding & Machine Co., Breckenridge, Tex., has acquired property at 310 East Third Street, Tulsa, Okla., for the establishment of a branch plant. Cleveland Johnson will be local manager.

The Florida Homes & Investment Association, P. O. Box 128, Tavares, Fla., has inquiries out for pumping machinery for deep-well, sand removal and other service. J. M. Gillespie is vice-president.

A machine shop will be installed in the new automobile service building to be erected by Harlee & Harrison, Bradentown, Fla., to be 100 x 170 ft., estimated to cost $42,000. A site has been acquired at Broad and Walnut Streets. Johnson & Fonda, Bradentown, are architects.

Baltimore

BALTIMORE, Nov. 12.

PLANS are being drawn for a one-story foundry, 100 x 230 ft., at the Maryland State Penitentiary, Baltimore, Claude B. Sweezey, warden, estimated to cost $75,000, for which an appropriation will be secured from the Legislature. A monorail conveying system will be installed. Theodore W. Pietsch, American Building, is architect.

The Black & Decker Mfg. Co., Baltimore, has announced a new price of $58 on its ½-in. special portable electric drill. The company's electric valve grinder has been reduced also, the new price being $34.

The Wagner Screen & Weatherstrip Co., 2703 Violet Avenue, Baltimore, has plans for a two-story addition, 50 x 100 ft. G. W. Wagner is head.

The Common Council, Ringgold, Ga., is planning the construction of a municipal electric light and power plant. A waterworks, with electrically operated pumping station, is also being considered.

The Bainbridge Brick Co., Bainbridge, Ga., has inquiries out for a clamshell bucket, about ⅛ or ⅝-yd. capacity; also for stiff-leg derrick attachments and fittings, with bull wheel.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until Dec. 4, for a quantity of miscellaneous twist drills, schedule 1563, and miscellaneous taps, dies, etc., for Eastern and Western yards, schedule 1565; until Nov. 20, for 50,000 ft. of antenna wire for the Washington Navy Yard, schedule 1546; until Nov. 27, for 12,000 lb. of shaft sleeves, for the Portsmouth, N. H., Navy Yard, schedule 1561; 6 water and gasoline pumps, and 3 electric motors, for the Hampton Roads, Va., Navy Yard, schedule 1548; and 4 electric ovens and spare parts for Eastern yards, schedule 1547; until Nov. 20, for 944 lb. of turbine blade shrouding for the Mare Island Navy Yard, schedule 1560.

The Ford Motor Co., Highland Park, Detroit, has concluded arrangements for the purchase of 10 acres in the Newton Park district, Norfolk, Va., as a site for a new assembling plant, for which plans will be prepared at an early date. It is expected to cost more than $350,000, with machinery.

The Edgerton Concrete Products Co., 202 Planters Bank Building, Wilson, N. C., has plans for new works to manufacture cement tile and concrete building products. Inquiries will be made at once for drain tile and roofing tile machinery, electric motors, transmission equipment and auxiliary apparatus.

The Foreman-Derickson Veneering Co., Elizabeth, N. C., is taking bids on a general contract for a new one-story plant in the Knobbs Creek section, 100 x 200 ft., with extension, 50 x 80 ft., estimated to cost $50,000.

The Bureau of Foreign & Domestic Commerce, Washington, has information of a company at Prague, Czechoslovakia, desiring to purchase American machinery and tools for the manufacture of screws, bolts, etc., No. 8074; also, of a concern at Quito, Ecuador, for machinery to manufacture aluminum ware, No. 8072; from Monterey, Mex., for paper-clip manufacturing machinery, No. 8071; from London, England, for an ice-manufacturing machine, 10 to 20 tons daily capacity, No. 8069; from Santa Clara, Cuba,

for machinery to manufacture matches, No. 8022; and from Christiania, Norway, for a cold storage plant, No. 8031.

The Victory Mfg. Co., P. O. Box V, Rockingham, N. C., recently organized by F. I. Mason and W. A. Williams, has inquiries out for machine shop equipment, including lathes, drill press, combination punch and shear, milling machine, hack saw and other equipment. Also for complete foundry equipment for installation in a local building. The company will manufacture cutters and cutting machines.

The Southern Appalachian Power Co., W. N. Garret, president, Asheville, N. C., has been granted permission by the Federal Power Commission, to build a hydroelectric generating plant on the Hiawassee River, near Murphy, N. C., with ultimate capacity of 50,000 hp. It will cost more than $400,000, with transmission equipment.

Bids will be received by the Quartermaster Department, Marine Barracks, Parris Island, S. C., until Nov. 22, for miscellaneous equipment, including 6 gross power hack saw blades; 9100 hexagon machine bolts; 300 lb. hexagon nuts; 1500 ft. wire hoisting rope; 1000 round-head stove bolts; 400 lb. wrought iron washers; 45 lb. of steel balls, etc., all as per lists on file.

The Fowler Stove & Roofing Co., Inc., Norfolk, Va., has awarded a contract to J. H. Pierce, Norfolk, for rebuilding the portion of its plant recently destroyed by fire. Additional equipment will be installed.

The Common Council, Durham, N. C., is considering the construction of a municipal electric light and power plant. R. W. Rigsbee is city manager.

The White Furniture Co., Mebrane, N. C., has tentative plans for a new steam-operated power plant, with direct-connected engine and generator. It is also proposed to electrify the furniture factory in all departments later, with the installation of motors, control equipment, etc. W. E. White is president.

Information has been received by the Bureau of Foreign and Domestic Commerce, Washington, regarding the proposed electrification of a railroad system in Japan, involving about $50,000,000. Power equipment, electrical apparatus, couplers, air brakes, etc., will be required. Full information on request, Reference No. 108,951.

The American Battery Co., Inc., Norfolk, Va., has acquired 15 acres between Norfolk and Ocean View, and is having plans drawn for a factory to manufacture non-liquid electric batteries. It will have an initial output of about 2000 batteries per day. Reuben T. Lipscombe is president.

The Norfolk Southern Railroad Co., Norfolk, Va., has inquiries out for two steam hammers, 800 and 1100 lb. capacity respectively; one motor-driven grinding machine; 25-in. lathe; tool-room lathe; side-head boring machine and other tools.

The Board of Directors, Cumberland Fair Association, Cumberland, Md., has preliminary plans for a cold storage plant in the vicinity of the new fair grounds, near Amcelle, Md., to cost close to $100,000.

The Wilson-Hock Co., City Point, Va., machinery dealer, has inquiries out for a twin-cylinder hoisting engine, with lifting capacity of about 3 tons; also for a centrifugal pump, 500 to 800 gal. per min. capacity, direct-connected to motor; duplex pump, suitable for pulp mill; one 7½-hp. back-geared motor, with starting equipment and auxiliary apparatus, and a quantity of spring brass wire.

A machine shop and manual training departments will be installed in the new Parker District high school to be erected at Greenville, S. C., to cost abot $300,000, for which plans are being drawn by J. E. Sirrine & Co., Greenville, architects.

The Carolina Power & Light Co., Raleigh, N. C., has purchased the Franklin Light & Power Co., Franklinton, N. C., and will make extensions and install additional equipment. The Yadkin River Co., a subsidiary of the Carolina company, has acquired the Carolina Electric Co., Maxton, N. C., and will expand the property.

The Southern Machinery Co., Quitman, Ga., will commence the erection of a new machine shop, 60 x 100 ft., with extension, 50 x 80 ft., to be equipped with a number of heavy duty lathes, planer, shapers, drill presses, bolt cutters and other tools. A crane will be installed. F. C. Underwood is president and manager.

J. R. Feldman, 209 Broad Street, Martinsville, Va., has inquiries out for machinery for grinding mica; also for stamping, with motors and other electrical equipment.

The Benson Hardware Co., Andalusia, Ala., is in the market for 25 patterns for solid cast-iron pulleys, size 2-in. to 12-in. face and 6 to 24 in. in diameter.

The Mobile Pulley & Machine Works, Mobile, Ala., is inquiring for a 60- or 72-in. vertical boring mill and turning mill, having two swivel heads and of the Bullard, Betts or Niles make.

Indiana

INDIANAPOLIS, Nov. 12.

PRELIMINARY plans are being arranged by the Illinois Central Railroad Co., 135 East Eleventh Place, Chicago, for additions to its shops at the Harwood yards, Evansville, Ind., including terminal yard improvements, to cost approximately $1,000,000. Considerable additional machinery will be installed.

The Common Council, Farmersburg, Ind., is planning for the installation of electrically operated pumping machinery in connection with a new waterworks plant, estimate to cost $40,000.

The Aladdin Mfg. Co., Muncie, Ind., manufacturer of electrical appliances, has acquired the plant and business of the Highlands Mfg. Co., manufacturer of kindred products, operating under a receivership for about two years. The new owner has construction in progress on new buildings and purposes to consolidate the works at this location and install additional equipment. George N. Spencer is president and William F. Spencer vice-president.

The Wayne Tank & Pump Co., Fort Wayne, Ind., manufacturer of gasoline pumps and oil storage systems, etc., will commence the erection of an addition to cost $50,000 with equipment.

A machine and repair shop will be installed in the one-story and basement automobile service works, 60 x 150 ft., to be erected by the Schiefer Automobile Co., 715-17 Barr Street, Fort Wayne, Ind., to cost about $75,000. Pohlmeyer & Pohlmeyer, Central Building, are architects.

The Damascus Crucible Steel Casting Co. New Brighton, Pa., has construction in progress on a branch plant at Hammond, Ind. The New Brighton works will be maintained as heretofore.

Manual training shops will be installed in the two-story and basement high school to be erected at Fellows and Ewing Streets, South Bend, Ind., estimated to cost $600,000 with equipment, for which bids are being asked on a general contract. Austin & Shambleau, 11 North Fayette Street, are architects.

The Remy Electric Co., Anderson, Ind., a division of the General Motors Corporation, manufacturer of automobile lighting and starting equipment, etc., has acquired the former factory of the Arvac Mfg. Co., manufacturer of universal joints, etc., and will remodel it for a branch plant. Facilities will be installed for about 600 operatives. Irving J. Reuter is general manager.

The Samuel Bingham's Son Mfg. Co., 636 Sherman Street, Chicago, manufacturer of printing press rollers, etc., will commence the erection of a new branch plant at 631 South Alabama Street, Indianapolis, to cost $50,000 exclusive of machinery. The present branch at 151 Kentucky Avenue will be vacated when the new factory is ready for occupancy. Guy R. Brooks is Indianapolis manager.

The Beatty Machine & Mfg. Co., Hammond, Ind., is inquiring for an Ingersoll-Rand air compressor, class P R E-2 Duplex or equivalent, with four-stage clearance regulators and of capacity 1500 to 2000 cu. ft. per min.

The Central South

ST. LOUIS, Nov. 12.

A MACHINE and repair shop will be installed on the third floor of the new service and headquarters building of the Oakland Automobile Co., Kansas City, Mo., to be three-stories, 64 x 245 ft., estimated to cost $115,000. J. G. Brecklein, Kansas City, is architect.

Bids will be received by H. C. Strohm, city clerk, Waterville, Kan., until Nov. 21, for motor-driven pumping machinery and auxiliary equipment for a new municipal waterworks. Black & Veatch, Mutual Building, Kansas City, Mo., are engineers.

The Oklahoma Iron Works, Inc., Tulsa, Okla., has arranged a joint bond issue with its affiliated organization, the International Supply Co., for $1,000,000, a portion of the proceeds to be used for extensions and improvements. The company manufactures oil well machinery and supplies.

The Louisville Taxicab & Transfer Co., Second and Walnut Streets, Louisville, is considering the construction of a three-story service and repair building, 140 x 200 ft., to cost $200,000, with equipment.

Manual training equipment will be installed in the new high school to be erected at Sedalia, Mo., estimated to cost $150,000, for which bids will be received on a general contract until Nov. 30. William B. Ittner, Board of Education Building, St. Louis, is architect.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

Iron and Soft Steel Bars and Shapes

Bars:	
Refined iron bars, base price	3.54c.
Swedish charcoal iron bars, base	7.00c. to 7.25c.
Soft steel bars, base price	3.54c.
Hoops, base price	5.19c.
Bands, base price	4.39c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.64c.
Channels, angles and tees under 3 in. x ¼ in. base	3.54c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.60c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	4.10c.
Toe-calk, ½ x ⅝ in. and larger	4.60c.
Cold-rolled strip, soft and quarter hard	7.50c. to 8.50c.
Open-hearth, spring-steel	4.50c. to 7.50c.
Shafting and Screw Stock:	
Rounds	4.40c. to 4.65c.
Squares, flats and hex	4.90c. to 5.15c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High speed steel, 18 per cent tungsten	75c. to 80c.

Tank Plates—Steel

¼ in. and heavier	3.64c.

Sheets

Blue Annealed

	Per Lb.
No. 10	4.20c. to 4.59c.
No. 12	4.25c. to 4.64c.
No. 14	4.30c. to 4.69c.
No. 16	4.40c. to 4.79c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.30c. to 4.70c.	.....
Nos. 22 and 24	4.35c. to 4.85c.	4.85c.
No. 26	4.40c. to 4.90c.	4.90c.
No. 28	4.50c. to 5.00c.	5.00c.
No. 30	4.70c. to 5.20c.	.....

No. 28 and lighter, 36 in. wide, 20c. higher.

Galvanized

	Per Lb.
No. 14	4.60c. to 5.10c.
No. 16	4.75c. to 5.25c.
Nos. 18 and 20	4.90c. to 5.40c.
Nos. 22 and 24	5.05c. to 5.55c.
No. 26	5.20c. to 5.70c.
No. 27	5.35c. to 5.85c.
No. 28	5.50c. to 6.00c.
No. 30	5.95c. to 6.45c.

No. 28 and lighter, 36-in. wide, 20c. higher.

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
⅛ in. Butt	—41	—24	⅛ in. Butt	— 4	+19
¼ in. Butt	—46	—32	¼ in. Butt	—11	+ 9
1-3 in. Butt	—48	—34	1-1½ in. Butt	—14	+ 6
2½-6 in. Lap	—44	—30	2 in. Lap	— 5	+14
7-8 in. Lap	—41	—11	2½-6 in. Lap	— 9	+ 9
9-12 in. Lap	—34	— 6	7-12 in. Lap	— 3	+16

Steel Wire

BASE PRICE* ON No. 9 GAGE AND COARSER	Per Lb.
Bright basic	4.75c. to 5.00c.
Annealed soft	4.75c. to 5.00c.
Galvanized annealed	5.40c. to 5.65c.
Coppered basic	5.40c. to 5.65c.
Tinned soft Bessemer	6.40c. to 6.65c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	17½c. to 18½c.
High brass wire	18 c. to 19 c.
Brass rods	15¼c. to 16¼c.
Brass tube, brazed	25½c. to 27 c.
Brass tube, seamless	22 c. to 23 c.
Copper tube, seamless	23½c. to 24½c.

Copper Sheets

Sheet copper, hot rolled, 19¾c. to 20¾c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14 x 20		
	Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20		Prime	Seconds
			80 lb.	$6.55	$6.30
			90 lb.	6.65	6.40
			100 lb.	6.75	6.50
IC	$12.55	$10.70	IC	7.00	6.75
IX	13.95	12.55	IX	8.25	8.00
IXX	15.55	13.75	IXX	9.50	9.25
IXXX	17.10	15.30	IXXX	10.75	10.50
IXXXX	18.85	16.80	IXXXX	12.00	10.75

Terne Plates

8 lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits pig	45c.
Bar	50c. to 55c.

Copper

Lake ingot	15¾c.
Electrolytic	15¼c.
Casting	14¼c.

Spelter and Sheet Zinc

Western spelter	7¾c.
Sheet zinc, No. 9 base, casks	10½c. open 11c.

Lead and Solder*

American pig lead	8c. to 8½c.
Bar lead	10c. to 12c.
Solder ½ and ½ guaranteed	32c.
No. 1 solder	30c.
Refined solder	26c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb	75c. to 90c.
Commercial grade, per lb	35c. to 50c.
Grade D, per lb	25c. to 35c.

Antimony

Asiatic	10c. to 11c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb	36c.

Old Metals

The market is firm and demand more active. Dealers' buying prices are nominally as follows:

	Cents Per Lb.
Copper, heavy crucible	11.00
Copper, heavy wire	10.50
Copper, light bottoms	8.75
Brass, heavy	5.75
Brass, light	5.00
Heavy machine composition	8.75
No. 1 yellow brass turnings	6.00
No. 1 red brass or composition turnings	7.75
Lead, heavy	6.00
Lead, tea	5.00
Zinc	4.00
Cast aluminum	15.00
Sheet aluminum	15.00